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Development and Socialization of Restrained Eating in Obese and Nonobese Youngsters

Joyce Renee Isbitsky

A Thesis

in

The Department

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Psychology

Presented in Partial Fulfillment of the Requirements
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ABSTRACT

Development and Socialization of Restrained Eating
in Obese and Nonobese Youngsters

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Concordia University, 1987

The objectives of this study were three-fold: (1) to examine, within a developmental framework, the relationship between restrained eating, sex and obesity in children and adolescents; (2) to explore the association between controlling and permissive feeding attitudes and restrained eating in children and adolescents; and (3) to investigate modeling effects in restrained eating. A multidimensional construct of restraint reflecting Cognitive Restraint, Disinhibition and Hunger was assessed via the Children's Eating Inventory, adapted from Stunkard and Messick's Three-Factor Eating Inventory. A Feeding Attitudes Questionnaire was constructed and psychometrically evaluated. Subjects included 232 children and adolescents in grades 4 through 11, as well as a sample of 92 obese and normal weight children (8 to 12 years) and adolescents (13 to 17 years).

As expected, in the unselected sample, girls were more restrained than boys in the later grades. Developmentally, the restraint scores of girls remained stable across age while boys's scores decreased significantly from earlier to later grades. Mothers endorsed more permissive feeding attitudes as their children aged, and generally, girls' mothers endorsed more controlling feeding attitudes than did boys' mothers.

Comparison of obese and normal groups revealed no differences at the young age level; however, obese adolescents were significantly more

restrained than their normal weight counterparts. Different developmental patterns emerged for obese and normal weight groups. Furthermore, obesity overrode sex as the preeminent predictor of restraint.

Further analysis of the three subscales of the Children's Eating Inventory revealed some distinctive patterns related to sex and obesity. As expected, a complex interaction was obtained between maternal feeding attitudes and youngster's age, sex and obesity. Finally, as predicted, modeling effects were stronger for girls, particularly obese girls. An integrative developmental model of restrained eating and socialization factors was proposed.

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Finally, I would like to dedicate this thesis to the memory of my dear friend and mentor, Dr. Kathy Porikos.

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Obesity is a condition characterized by an excessive generalized deposition and storage of nonessential subcutaneous fat or adipose tissue. It results from prolonged positive caloric balance, i.e. a chronic state of energy intake exceeding energy expenditure (Hollenberg, 1978). Recent evidence from epidemiological, medical and socio-psychological studies has provided a consensus on the adverse consequences of obesity in children and adolescents.

Brownell (1982) notes that obesity is a serious and prevalent problem among children in industrialized societies. Indeed, obesity is considered by some authorities (Howard, Dub & McMahon, 1971) to be the most common pediatric nutritional disorder in the developed countries, evident as early as the nursery school level (Knittle & Ginsberg-Fellner, 1975).

Raub, Schumsky, and Witt (1967) have conservatively estimated ten percent of all children in the United States, Canada and Great Britain to be obese. Furthermore, the prevalence of obesity is increasing in American (Hammar, 1975) and Canadian (Oscanova & Hejda, 1975) children. Contrary to the myth that children outgrow their "baby fat", the persistence of childhood obesity into adulthood has been confirmed (Brownell and Stunkard, 1980). Fully 80 percent of obese children become obese adults (Abraham and Nordsieck, 1960), and if an obese child has not slimmed down by the end of adolescence, the odds are 28 to 1 against him doing so in adulthood (Stunkard & Burt, 1967).

Obesity in children has been associated with a number of medical problems such as decreased growth hormone release, hyperinsulinemia, hyperlipidemia, hypertension and carbohydrate intolerance (Clarke, Morrow

& Morse, 1979; Grinker, Hirsch & Levin, 1973; Lauer, Conner, Leaverton, Reiter & Clarke, 1975). Kannel and Dawber (1972) claim that many atherogenic serum lipid disorders originate in childhood and there is some evidence that obesity in children is an independent risk factor for later coronary heart disease (McLain, 1976; Miller & Shekelle, 1976).

For the adult obese, it has been suggested that associated medical risks are higher, and psychological disturbance more pervasive and persistent, in those whose obesity dates from childhood (Hirsch, 1975; Rivinnus, Drummond & Gombrinck-Graham, 1975).

The psychological and social sequelae of obesity are particularly debilitating for children. Stigmatization and negative self-concept associated with obesity have been observed in children as young as four years (LeBow, 1977) and in adolescents (Canning & Mayer, 1966; Mayer, 1975; Mendelson & White, 1985; Stunkard, D'Acquili, Fox & Filion, 1972). Obese children are at increased risk for disturbed family relationships, disapproval from peers, academic discrimination and poor self-image (Brownell & Stunkard, 1980; Canning & Mayer, 1966; Lerner & Gellert, 1969; Sallade, 1973).

The myth of the "healthy, chubby baby", bound to outgrow his "baby fat", is being replaced by the grim reality of the obese child as a prime candidate for "disease, discomfort and despair" (LeBow, 1977, p. 324.).

Early intervention may help curtail fat cell proliferation, thus preventing the irreversible hyperplasia that is associated with most pronounced cases of obesity and which predisposes an individual to adult obesity and to difficulty with weight reduction (Hager, Sjostrom, Arvidsson, Bjorntorp & Smith, 1978; Hirsch & Knittle, 1970). The urgency

of identifying the controllable biological and psychological factors contributing to obesity in children, in order that the condition be treated and ultimately, prevented, is clear.

In the present thesis, an effort is made to integrate and examine, within a developmental context, two promising lines of research in the obesity field. The first area concerns the recent formulation of a theory of "restrained eating", and its applicability as a model to explain the eating behavior of some overweight individuals. The second area concerns the role of the mother in the socialization of children's eating behavior, and how certain maternal factors relate to the development of both obesity and restrained eating in children.

Recent studies have suggested that a restrained eating style of chronic dieting has important theoretical and practical implications for our understanding and treatment of the eating disorders in general (Polivy, Herman, Olmstead & Jazwinski, 1984; Striegel-Moore & Rodin, 1986). The relevance of restraint theory to obesity, in particular, remains controversial. Despite the flurry of research activity generated by restraint theory, the developmental origins and parameters of restrained eating are unknown (Herman & Polivy, 1980).

Regarding the socialization of children's eating behaviors, the preeminent role of the mother in feeding, and its impact on both the psychosocial and physical development of the child has been emphasized in the psychoanalytic (Bruch, 1975), social-learning (Ullman & Krasner, 1975) and nutrition literature (Fox, Fryer, Lamkin, Vivian & Eppright, 1970). However, the critical features of the mother-child interaction associated with normal and pathological outcome await identification.

Based on the literature on general child-rearing practices (Bronstein-Burrows, 1981) and on recent speculations regarding parental factors related to childhood obesity (Woody & Costanzo, 1981), the autonomy versus control dimension seems particularly salient. The socialization of "obesity-prone" behavior may reflect a specific instance of the more general developmental phenomenon in which parental restrictions paradoxically serve to undermine the internalization of self-control and subsequent self-regulation. Furthermore, sex appears to play a major role in the socialization of eating behavior, with differential parental expectations and values regarding weight and appearance, and subsequently differential feeding practices for boys and girls. Again, the critical parameters of the mother-child interaction associated with deficits in self-regulation of eating and consequent weight deviations are unknown. Apart from the direct influence of mothers in feeding, by virtue of their control over availability and selection of food, attitudes and values towards overweight and dieting may also be transmitted indirectly, via modeling (Epstein, 1986). The degree of correspondence between the restraint orientations of mothers and their children and adolescents has not yet been explored.

The major objectives of the present research are threefold: the first is to examine, within a developmental framework, the relationship between restrained eating, sex and obesity in children and adolescents. The second objective is to explore the association between controlling versus permissive feeding attitudes and the development of restrained eating and obesity; and finally the third objective is to investigate the relationship between restrained eating in mothers and their children and

adolescents.

Background

Restraint Theory

Restraint theory (Herman & Polivy, 1980) refers to a model of food regulation which has as its focus the notion that voluntary resistance, i.e. the cognitive resolve not to eat, in order to control body weight, is the key determinant of eating behavior. Furthermore, it is proposed that restrained eaters develop anomalous eating patterns as a result of the stress inherent in chronic self-control. For example, the distinctive eating patterns characterizing obese individuals are attributed entirely to the high level of restraint in the obese population.

A 10-item scale was developed by Herman & Polivy (1980) to assess the construct of restraint. Restrained eaters, who are chronically concerned with weight, food and dieting, fall at one end of the continuum, while unrestrained eaters, who give little thought to such matters, fall at the other end. At any given time, the food intake of restrained eaters is said to be determined by the balance between their desire to eat and their wish to diet. While restrained eaters may usually be successful in adhering to their diets, certain events such as forced preloading (a dietary violation), alcohol consumption and emotional states such as anxiety and depression may interfere with their self-control, thereby allowing them to overeat. These diet-disrupting factors have been termed "disinhibitors".

The disinhibitor most frequently investigated has been the forced preload. Even in as sterile a setting as a laboratory, dieters have consistently exhibited a pattern in which they eat little ad lib food

(thus maintaining their diets) after no preload or a small forced preload, but eat a great deal of food ad lib after being forced to consume large, high-calorie preloads (Polivy & Herman, 1985). This paradoxical behavior, termed "counterregulation", has been reported several times among persons of normal weight, and constitutes the most robust finding of this research (Herman & Mack, 1975; Herman & Polivy, 1980; Ruderman & Christensen, 1983; Ruderman & Wilson, 1981; Spencer & Fremouw, 1979; Woody, Costanzo, Leifer & Conger, 1981). Non-dieters, by contrast, exhibit normal regulation in that they eat much more ad lib food after no preload or a small forced preload, than after a large forced preload.

The process by which a preload is presumed to induce overeating is cognitive. The disinhibition of restraint which occurs in the counterregulation phenomenon is attributed to a motivational collapse apparent when the chronic dieter exceeds a self-imposed caloric quota. It is assumed that many restrained eaters hold a dichotomous, all-or-nothing attitude towards diets, and that eating a forbidden substance, such as a milk shake, or overeating, induces stressful cognitions such as "I've blown it, the day is lost, I might as well continue to eat!"

The notion that counterregulation by restrained eaters represented a form of disinhibition was explored with the use of a classic disinhibitor, alcohol. Under appropriate circumstances, the ingestion of alcohol increased the consumption of restrained, but not of unrestrained eaters (Polivy & Herman, 1976b).

Other potential disinhibitors of self-control are dysphoric emotions. As expected, when depressed, restrained eaters gained weight,

whereas unrestrained eaters lost weight (Polivy & Herman, 1976a). Similarly, when anxious, restrained eaters ate more while unrestrained eaters ate less (Herman & Polivy, 1975). Most recently, Ruderman (1985a) found that restrained eaters ate more when in a dysphoric mood than when in an nondysphoric mood, while unrestrained eaters consumed similar amounts in both mood states.

Restrained eating has also been related to sex. Females tend to score higher than do males (Herman & Polivy, 1980). This finding is consistent with those of studies in which sex differences in dieting concern and actual dieting behavior have been documented, both for adolescents and adults (Dwyer, Feldman, Seltzer & Mayer, 1969).

Relationship between Restrained Eating and Obesity

Theoretical considerations. Restraint theory was originally developed to account for documented behavioral and physiological differences between obese and nonobese individuals (Schacter & Rodin, 1974). The "External-Cue Hypothesis" proposed by Schacter and his colleagues stated that, compared to that of normal-weight individuals, the eating behavior of the obese is more responsive to external (environmental) stimuli and less responsive to internal (physiological) hunger signals. Obese subjects were also shown to be hyperresponsive to salient non-food-related environmental cues. The notion that the obese are "stimulus-bound" features prominently in popularized views of obesity and has stimulated much research. Stimulus-control procedures intended to minimize the number of cues that would elicit eating remain a central component of most behavioral treatment programs for obesity (Brownell & Wadden, 1986, Rodin, 1980).

The proponents of restraint theory posited that the "externality" of the obese might simply reflect the fact that many obese individuals are chronic dieters, i.e. that their "obese eating style" is due to the high level of restraint in the obese population (Herman & Polivy, 1980). The notion that the critical aspect of obesity was weight suppression (dieting) rather than adiposity (fat), per se, as implied by Schacter's work, had its genesis in Nisbett's (1972) set-point theory of weight regulation. This theory held that an individual's hypothalamus is programmed to defend a particular biologically determined equilibrium weight or set-point. Set-point is presumed to vary with the number of fat cells (adipocytes) in the body. Nisbett suggests that many obese persons possess an abnormally high number of adipocytes as a result of genetic inheritance and/or early overfeeding, and must consequently overeat (and remain overweight) in an attempt to meet the biological demands imposed by these cells. Social pressures may inhibit eating by these individuals, resulting in a person who is at once overweight according to cultural standards, underweight according to his set-point and chronically restrained with respect to eating (O'Neil, Paine, Riddle, Currey, Malcolm, & Sexauer, 1981). Restraint theory holds considerable appeal as a comprehensive and parsimonious formulation which seeks to integrate physiological and psychological approaches to our understanding of disorders in eating and weight regulation. However, the relationship between obesity and restraint is still controversial, as will be seen in the following section.

Empirical Investigations. Two lines of empirical inquiry related to restraint in the obese arise from restraint theory. First, is restraint

characteristic of obese individuals and second, do both obese and non-obese restrained eaters develop similar, anomalous eating patterns? The idea that restraint is characteristic of the obese has some empirical support from studies in which restraint and percentage overweight were correlated. Six studies have, in fact, obtained a high correlation between scores on the restraint scale and severity of overweight (Drewnowski, Riskey & Desor, 1982; Hibscher & Herman, 1977; Klesges, 1984; Lowe, 1984; Ruderman, 1985b; Wardle, 1980). However, three studies yielded contradictory findings. Herman and Mack (1975) found that while obese subjects had slightly higher restraint scores than normal weight subjects, the difference was not significant. Spencer and Fremouw (1979) observed significant restraint score differences between underweight and normal/overweight groups, but not between normal and overweight groups. Finally, O'Neil et al (1981) found that restraint scores were not significantly related to percent overweight in a sample of female participants in a weight control program.

Lowe (1984) suggests that these discrepant findings may be related to the possibility that in some normals, history of overweight is related to their restraint scores. He found that, at their greatest prior weight, restrained normals were more overweight than unrestrained normals. He adds that Herman and Polivy (1980) never specify whether restrained eaters include those who have never been obese but would become obese if they "let themselves go", formerly obese but currently normal weight individuals, or both. They do state that restraint, as they measure it, is defined more in terms of effort expended towards weight suppression than in terms of achieved success (Herman & Polivy,

1980).

Another variable which might affect obese/normal differences in restraint is age. Wyden (1965), on the basis of a nationwide poll in the United States, found that almost one third of adults who were overweight were unconcerned about their condition. Forty percent were concerned but not enough to do anything about it. Twenty percent were trying not to gain any more weight. Only ten percent of overweight persons were actually dieting. In contrast, the studies of Huenemann, Hampton, Shapiro and Behnke (1966), Huenemann, Shapiro, Hampton, Mitchell and Behnke (1966) and Dwyer et al (1969) indicate that almost all obese adolescents are concerned about their weight and that they engage in remedial efforts more often than do adults.

As noted previously, dieting concern and restraint are also affected by sex. Jacobovits, Halstead, Kelley, Roe, & Young, 1977) found eighty percent of college women were either on diets, or consciously trying to control their eating in order to keep their weight down. Females also weigh themselves more often (Dwyer et al, 1969) and are more likely to describe themselves as "fat" (Hueneman, Shapiro, Hampton, & Mitchell,& Behnke, 1966), to diet more frequently (Gray, 1977), to seek medical advice for problems associated with overweight (Waldron, 1983) and to report more depression related to weight (Klesges, 1984). Sex differences in restrained eating have also been documented (Herman & Polivy, 1980).

The answer to whether restraint is characteristic of obese individuals must be moderated by variables such as age and sex. Furthermore, in comparing obese and normal weight groups, history of

overweight should be controlled.

The second question to be addressed is whether obese and normal weight restrained individuals develop similar, anomalous eating behaviors. In a study modeled after the original preload experiments, Ruderman and Wilson (1979) found no support for the theory's hypotheses concerning the relationship among weight, restraint and food consumption. They also reanalyzed data from two previous studies which had included reasonable numbers of overweight subjects (Hibscher & Herman, 1977; Spencer & Fremouw, 1979). Based on their own study and the two reanalyses, they found that among obese people, preloads had a strong inhibiting impact on the food consumption of unrestrained eaters and little impact on the food consumption of restrained eaters. Obese unrestrained eaters consumed much less after a preload than without one, while obese restrained eaters ate similar amounts with and without a preload. Ruderman & Christensen (1983) confirm that counterregulatory binge-eating behavior seemed characteristic only of restrained normals. Obese individuals who were restrained did not conterregulate. They state "restrained eaters as selected by Herman et al's (1978) scale are not appropriate analogues of the obese... whereas they demonstrate predictable and interesting eating patterns, these patterns do not correspond to those of obese individuals" (p.214)

In summary, early research on restraint in obese populations indicates that the restraint scale may be related to somewhat different behaviors in the obese when compared to normal weight persons. Further support for the study of restraint as a separate phenomenon in the obese is to be found in studies of construct validity of restraint scales.

With respect to the Herman-Polivy scale, studies with normal weight persons have revealed that it measures not only the dietary restraint as intended, but also weight fluctuation (Blanchard & Frost, 1983; Drewnowski et al, 1982; Johnson, Lake & Mahon, 1983; Lowe, 1984).

Ruderman (1983) conducted the first study which examined and compared the internal properties of the restraint scale in obese and normal samples of female undergraduates. Factor analysis replicated a two-dimensional solution for normals, i.e. a concern for dieting factor which accounted for 32% of the variance and a weight fluctuation factor, accounting for 27% of the variance. For the obese, a 4-dimensional solution emerged with weight fluctuation, bingeing, tendency to diet and overconcern with diet factors accounting for 25%, 17%, 15% and 12% of the variance, respectively. Furthermore, the internal consistency of the total restraint scores was only .51 for the obese sample as compared to .86 for the normal sample. On the basis of her findings, Ruderman (1983) concludes that "for the normal weight sample, the scale seems to meet reasonable psychometric standards, and is interpretable as a measure of concern with dieting and a history of weight instability. The scale's meaning in the obese sample is less clear, and its reliability less acceptable" (p.257).

Three-Factor Eating Inventory. Stunkard and Messick (1985) insist that in obese populations, it is the Restraint Scale that is problematic and that the concept of restraint is sound. They note that a single question about dietary restraint was sufficient to identify obese persons who overate in a fast food shop, from those who did not, even though the question did not distinguish among persons of normal weight (Stunkard,

Coll, Lundquist, & Meyers, 1980). They speculate that a wider variety of disinhibitors may operate in the obese. As well, whether the obese may restrain in a particular situation may be related to social context. In response to the need to consider a wider variety of eating contexts and stimuli when conceptualizing restraint in the obese, Stunkard and Messick (1985) developed the Eating Inventory. The questionnaire items were derived initially from three sources: Herman and Polivy's Restraint Scale (1980); the authors' clinical experience; and the Latent Obesity Questionnaire, described next.

Stunkard and Messick note that while Herman and his colleagues were studying restrained eating, primarily by persons of normal weight, a German group, working with obese as well as nonobese individuals, developed a similar concept, "latent obesity" and a scale to measure it (Pudel, 1978). Meyer and Pudel (1977) found that the rate of consumption of a 20 minute test meal differentiated obese from nonobese persons. The rate of eating by nonobese people slowed during the meal, while that of obese persons did not. One group of nonobese persons whose rate of eating also did not slow during the meal were labelled "latent obese". Pudel suggested that these persons might be biologically programmed to be obese but able to maintain a normal body weight by consciously restricting their food intake. To investigate this possibility, he constructed a 40 item questionnaire that proved successful in identifying persons of normal weight who failed to slow their rate of eating during a meal. Such items seem to include a wider variety of eating and restraint behaviors than the Herman & Polivy scale.

In the development of the Eating Inventory, the initial sample was

recruited so as to ensure extensive variability with respect to restraint in eating. The group selected as restrained eaters or "dieters" consisted of 18 male and 60 female members of a weight reduction group noted for its severity. About half of these participants were of normal weight at the time of testing while half were still obese; all had lost large amounts of weight. Unrestrained eaters were selected by the members of the weight reduction program. Each group member solicited the participation of the single most free-eating nonobese persons of his or her acquaintance. By this means, 22 male and 40 female unrestrained or free eaters were selected. Bias in the psychometric analysis of extreme groups was offset by selection of an intermediate sample consisting of 57 males and 23 females chosen by members of the weight reduction program on the basis of geographic proximity to their homes. Two ancillary samples were drawn consisting of 52 female members of a community service organization and 7 male and 21 female members of a university adult education class.

Factor analysis of the initial item pool resulted in three factors. The interpretation of the provisional factor scales served as guides for item revision and new item development. In addition to several new items written to these specifications, several items that originally loaded substantially on two factors were revised to sharpen the distinction between the factors. A revised questionnaire consisting of 93 items was administered to a second sample of 7 male and 46 female participants in the same weight reduction program, as well as to 5 male, 13 female, and 27 who did not record sex, free eaters, nominated by the dieters in the manner described previously. The revised questionnaire

discriminated very well between the two new subgroups of dieters and free eaters. Since the three factors were correlated with each other to varying degrees, partial correlations were computed for each item with its own provisional factor, holding constant the other two scales. Significant partial correlations resulted in retention of 23 items for Factor I, 20 items for Factor II and 15 items for Factor III.

This work resulted in the 58 item, three-factor Eating Inventory. The authors note that the identification of three dimensions within the global concept of restrained eating permits the more differentiated study of eating and dieting behavior and cognitions in the obese. Factor I was interpreted as cognitive control of eating behavior; Factor II was thought to reflect disinhibition of control; and Factor III was formulated as susceptibility to hunger or perceived hunger.

The few applications of the Three-Factor Eating Inventory support its usefulness. It has predicted weight change and eating behavior in a variety of circumstances in non-obese subjects. In each case, Disinhibition (Factor 2) has been the predictive variable. Weissenburger, Rush, Giles, and Stunkard, cited in Stunkard and Messick (1985) found high scores on Factor 2 to be highly correlated with weight gain during depression. A similar pattern was observed following smoking cessation in a study by Hall, Ginsberg & Jones, also cited by Stunkard and Messick. Similarly, Factor 2 was strongly associated with overeating of a experimental test meal in the laboratory (Shrager, Wadden, Miller, Stunkard & Stellar, 1983) and with responses of bulimic patients on a binge-eating scale (Marcus & Wing, 1983). In addition, binge severity correlated with Factor 3 (perceived hunger).

Only one study (Bjorvell, Rossner & Stunkard, 1985) examined scores on the Eating Inventory in obese patients. The questionnaire was administered to 88 men and women following behavioral treatment for obesity, and to a comparison group of 16 obese and 60 normal weight persons. Treated subjects showed higher scores on Factor 1 (cognitive restraint) of the scale than did untreated obese and normal weight subjects. Furthermore, the correlation between Factor 1 scores and weight loss increased over time in treatment. Factor 2 (disinhibition) and Factor 3 (hunger) scores were significantly higher in the obese groups than in the normal weight group, but were not correlated with weight change. According to the authors, these findings suggest that cognitive control of eating discriminates obese from nonobese persons and increases during behavioral control for obesity.

As is evident from the foregoing review, the construct of restrained eating has evolved considerably over the past decade. Measures of restrained eating are characterized by increasing complexity and conceptual sophistication, and psychometric refinement. Polivy, Herman, Olmstead and Jazwinski (1984) note that the Restraint Scale was designed primarily for use with normal populations. It has generated much research indicating interesting and replicable patterns of consumption (Striegel-Moore & Rodin, 1986). The Eating Inventory seems to address the major methodological and conceptual problems associated with the Restraint Scale. In particular, the Eating Inventory permits study of voluntary cognitive control as well as factors which might serve to undermine such control. As such, this measure holds considerable promise in elucidating the eating patterns of obese individuals.

Neither the Restraint Scale nor the Eating Inventory have been conclusively evaluated with respect to social desirability. Beyond the role of social desirability as a potential factor in undermining the validity of the scales themselves, the theoretical implications of social desirability or self-consciousness for the construct of restraint merit careful scrutiny.

Five studies have attempted to address the question of whether, and if so, how, restraint and social desirability are related, using paper and pencil measures of both restraint (Restraint Scale) and social desirability (Blanchard & Frost, 1983; Johnson, Lake & Mahan; 1983; Kickham & Gayton, 1977; Klesges, 1984; Ruderman,1983). Three of the studies included an obese sample. Conclusive statements regarding the nature of the relationship between restraint and social desirability cannot be made on the basis of these studies, owing largely to their lack of comparability with respect to the age, sex and dieting status of the samples, and in measures of social desirability used. To date, there have been no investigations of the relationship between social desirability and the Three-factor Eating Inventory; therefore, it was deemed necessary to control for social desirability in the present research.

Development and Socialization of Restrained Eating

Developmental studies of restraint. One purpose of the present research is to extend the study of restraint to include obese and normal weight children and adolescents. To date, a single group of investigators has directly addressed the development of restraint in a sample of children and adolescents of unselected weight status (Davis,

Best & Hawkins, 1981; Davis, Woodruff & Hawkins, 1980). These investigators used a revision of the Herman & Polivy scale rather than the multidimensional construct of restraint. The developmental origins of the multidimensional construct of restraint, of the individual components which comprise it, and their relationship to obesity remain unexplored.

Davis et al (1980) assessed the relationship between self-attributions of masculinity-femininity, body image and dieting concern (restraint). An extension of this investigation (Davis, Best & Hawkins, 1981) included two measures of obesity, i.e. skinfold and height/weight data. Subjects were 193 children and adolescents aged 10 to 16 years, in grades 4, 6, 8 and 10. At each grade level, girls reported more eating restraint than boys, and by the 8th grade, girls expressed a great deal more dieting concern than boys. Sixty-eight percent of the girls, as compared to 16 percent of the boys, acknowledged having dieted. Furthermore, while boys' scores revealed no age trends, girls' scores increased significantly with age. At all age levels, boys and girls who were more concerned with weight and dieting reported more dissatisfaction with their physical appearance and were actually more obese. Unfortunately the design of this study does not permit conclusive statements to be made regarding the relationship between obesity and restrained eating in children and adolescents. While positive correlations were observed between dieting concern and weight measures, differences in restraint between obese and normal-weight children were not systematically investigated. However, the following studies provide some information about restraint in obese youngsters.

Childhood obesity and restraint. In a study designed to test the hypothesis that some individuals, especially the obese, eat in response to negative feelings such as anxiety and poor self-esteem, Woody and Costanzo (1981) asked 7 to 13 year old obese and normal weight children either to recall experiences of rejection by peers or to recall positive social experiences. At the end of the interview, during one five minute period the interviewer was present, while for another five minutes he was absent. Incidental eating of peanuts was recorded for both these conditions. All children, obese and normal weight, who recounted positive experiences with peers consumed significantly more than those recounting negative experiences. Interestingly, an unexpected source of variance was the main effect of the presence of the interviewer and a three-way interaction of sex, weight and interviewer presence. While all subjects tended to eat more when alone than with the interviewer, obese girls ate the least of any group when with the interviewer, but the most of any group, when alone. The difference between grams consumed in the presence and absence of the interviewer was highly significant for obese females, but nonsignificant for each of the other groups. The authors suggest that, by childhood, obese girls are beginning to show an enhanced dependence on social cues for restraint. As such, obese girls might be expected to score higher on cognitive restraint, as defined by Stunkard and Messick (1985), and to be more vulnerable to disinhibition, relative to other groups.

In a second study in which restrained eating was noted, incidentally to occur in children, Isbitsky and White (1981) examined externality and locus of control in obese and nonobese children aged 8 to 12 years.

Normal weight children were expected to consume less following a food preload (full condition), whereas preloading was not expected to affect the amount eaten by obese children. Interestingly, obese girls ate considerably, although not significantly less than all other groups. Furthermore, the degree of overweight of obese girls was negatively correlated with the amount they ate in the hungry (no preload) condition. In addition, all groups except obese girls, tended to eat slightly less when full than when hungry. Spontaneous comments of some obese girls indicated that they were restricting their food intake in order to control their weight.

Together, these three studies seem to indicate that deliberate cognitive restraint is evident in the observed behavior or self-reports of both obese and normal weight children as young as seven years. There is evidence that by the grade eight, girls are more restrained than boys and that obese girls may be particularly vulnerable to social cues as inhibitors or disinhibitors of eating behavior.

In the present study, Davis et al's (1981) work on the development of restraint as a function of sex and age in an unselected weight sample of children in grades 4 to 11 will be replicated using a revision of the Stunkard & Messick (1985) scale for children. As noted previously, the construct of restrained eating in adults has evolved, both in terms of conceptual complexity and assessment methodology. The multidimensional construct of restraint, as measured by the Eating Inventory, takes into account not only cognitive strategies influencing food intake, but also perceived hunger and vulnerability to disinhibition.

The present research will also extend the study of eating behavior in

children by examining restraint in obese as well as normal weight children, and by comparing these groups on the three factors of the restraint scale.

A final goal of the research is to investigate the relationship of maternal feeding attitudes and maternal restraint and children's restraint. In the following sections, literature pertinent to an understanding of possible mechanisms by which a restrained orientation may develop is reviewed. In particular, the review focuses on theoretical perspectives on the issue of autonomy-control in maternal feeding practices, with regard to a number of parameters of the feeding transaction, and on maternal modeling of restraint.

Feeding Attitudes. That parental attitudes and other socializing forces can be major causes of obesity is supported by data on adopted children (Garn, 1976), indicating that the tendency to obesity exists among children adopted by obese parents. Studies on the effects of socioeconomic status and cultural factors on the incidence of obesity (Stunkard, 1986) also attest to the influence of nonbiological factors. Woody and Costanzo (1981) note that parents are more clearly the prime socializers of food intake than of most other areas of behavior, since there is less involvement and control by peers and other adults than in many other domains. Recently, parental involvement in the treatment of child obesity has also been investigated (Epstein, 1986; Israel, Stolmaker & Andrian, 1985; Epstein, Wing, Woodall, Penner, Kress & Doeske, 1985; Cohen et al, 1980, Brownell, Kelman, & Stunkard, 1983).

The primacy of the mother in the socialization of eating patterns has received substantial attention in the psychoanalytic, nutrition and

social-learning literature. Garn, cited in Stuart and Davis (1972) has asserted that "The key person in obesity appears to be the mother or mother-surrogate... who has the key to the cupboard and can be the 'pusher of calories'" (p.20). Stuart and Davis agree that "Indeed it defies the imagination to conceive of an obese child who has not gained and maintained his weight without the planned or unwitting complicity of his mother" (p.20). Maternal influence of child eating behavior may be achieved through direct control of foods available to the child. Indirect influences include conditioning and reinforcement, explicit and implicit instruction, transmission of attitudes and modeling (Phillips, Bass & Yetley, 1978; D'Augelli & Smiciklas-Wright, 1978; Epstein, 1986; Ullman & Krasner, 1975).

A key theme which consistently emerges in the literature on maternal socialization of eating, across disciplines, is that of autonomy versus control. The autonomy-control dimension is central to theories of general child-rearing (Bronstein-Burrows, 1981; Biehler, 1981) in relation to normal and pathological child development. Recently, Maccoby (1984) has discussed autonomy as an aspect of children's functioning that may or may not change with age, but that pervades all aspects of children's responses to socialization pressure. Autonomy demands strong effort to be in control of one's own actions and outcomes. These autonomy strivings mean that the character of the parent-child relationship is always a contrapuntal one. Regarding the developmental nature of autonomy, she states "We can only assume that there is a transition as the child grows older, from moment to moment monitoring by parents to more distal forms of parental control that involve

coregulation by parent and child jointly" (p.324).

In the following discussion, literature pertaining to autonomy-control, specific to eating and weight-related issues, will be reviewed in order to highlight those dimensions of eating which might reflect permissive versus controlling feeding attitudes in mothers.

Rodin (1977) cites research on control and predictability as one of several areas where studies of eating behavior and obesity interface with current interests in social-psychological research and theory. She notes the need to study how the restriction or enhancement of choice, control and freedom influence behavior.

Pertinent topics concern the consequences to an individual resulting from an inability to control food intake, both to weight and general well-being; the conscious control of eating by restrained eaters and anorectics; the influence on subsequent eating behavior of the unpredictability about food availability during early experience and the application of cognitive-behavioral self-control strategies to disordered eating.

The present discussion will focus on those aspects of autonomy-control related to the maternal-child feeding interaction. The autonomy-control dimension can be conceptualized as a continuum, or rather, a set of contina, one for each aspect or parameter of the feeding transaction. Some parameters would include the amount of food ingested, food choice or selection, the timing and rate of feeding and the instrumental uses of food, i.e. as a reinforcer ("You may have some pie when you tidy your room") or to obtain a reinforcer ("If you eat your vegetables, you can watch television").

At one endpoint of each continuum would be extreme permissiveness in which the child is allowed to assume full responsibility for the amount of food eaten or food selected. Food, in this case, would never be used instrumentally. At the opposite endpoint of the continuum, the mother would assume complete control of the child's intake. In this case, instrumental conditioning would be used to indirectly control the child's behavior and/or food intake.

A number of studies with adults, children and animals have investigated various parameters of feeding or eating, in isolation and in combination, and have related them to subsequent eating behavior or obesity. Several of these studies have specifically addressed the autonomy-control issue. Gross, cited in Rodin (1977) for example, investigated the influence on subsequent eating behavior of the unpredictability of food availability in rats by manipulating the timing and scheduling of feeding. Rats maintained under conditions of randomly varied deprivation were compared to animals having abundant food constantly available. When subsequently placed on ad-lib food, the randomly deprived rats overate and got fat. By contrast, maintenance under conditions of regular, predictable deprivation intervals had no subsequent effect on overeating.

Rodin (1977) reviews studies which suggest that the food selection behavior of obese adults differs somewhat from that of normals, and that ingestive behaviors are considerably influenced by selection differences. Nutritionists Fox, Fryer, Lamkin, Vivian & Eppright (1970) surveyed mothers' influence on food selection and amount consumed by their children. They confirmed that most of the meals of the preschoolers in

their sample were eaten at home, under the mothers' supervision. Furthermore, although more children were allowed to decide the amounts of food eaten than to select which foods they ate, half the mothers decided the amount of food the children ate (Eppright, Fox, Fryer, Lamkin & Vivian, 1969). Unfortunately, the relationship between maternal control and children's weight status was not assessed.

Birch and her colleagues conducted several studies to investigate the role of conditioning in the development of young children's food preferences. Birch, Marlin, & Rotter (1984) note that many of children's earliest experiences with contingencies involve food and eating and that adults frequently employ contingencies to control children's behavior. Eating is often the instrumental (means) activity and/or the contingent reward (ends) activity.

Birch, Zimmerman and Hind (1980) suggest that examination of the environmental contexts in which sweet foods are presented to children in our culture reveals that the social-affective context tends to be positive. Sweet foods are frequently used by parents as reward, pacifiers and treats. They are present at children's parties and are an integral part of holiday celebrations. Furthermore, they add, parents and others who interact with young children control the contexts in which sweet foods are presented, and child-rearing practices associated with the presentation of sweet foods may be influencing the formation of a "sweet tooth". In order to test this hypothesis, Birch et al (1980) investigated the effects of several social-affective presentation contexts on the formation of preschooler's food preferences. Results indicated that presenting foods as rewards or presenting them non-

contingently, but paired with adult attention significantly increased preference for those foods. In contrast, no consistent change in preference was noted when the foods were presented in a non-social context or at snack time. While there was no significant main effect for type of snack (i.e. sweet versus non-sweet), the authors suggest that, to the extent that sweet foods are presented in similar contexts at home or school, children's preferences for those presented foods are being enhanced.

In a subsequent study, Birch (1981) has shown that enhanced preferences can generalize to other foods perceived as similar, by the child, to the food initially presented.

That the instrumental use of food is a widespread practice in our culture is supported by the results of a survey by Eppright, Fox, Fryer, Lamkin, Vivian and Fuller (1970). Interviews were conducted with 2,000 families with preschool children living in the north central region of the U.S., regarding feeding practices. Sixty-two percent of the mothers in the sample indicated that they used sweet foods as rewards and pacifiers, or that they withheld sweet foods as punishment.

Birch et al (1984) have also investigated the case where contingencies are used by adults to control the child's eating behavior, i.e. where eating becomes instrumental in obtaining a reward. In an initial experiment designed to investigate the effects of instrumental consumption on food preference (Birch, Birch, Marlin & Kramer, 1982), children drank fruit juice instrumentally, in order to gain access to attractive play activities. A significant decrease in preference for the juice followed instrumental consumption.

Lepper, Sagotsky, Dafoe, and Greene (1982) have proposed that the child's acquisition of an abstract discounting principle is a gradual construct process occurring as a result of the child's accumulated experience with means-ends relationships in social contexts, and that children may learn to expect a negative relationship between the amount of external pressure applied and their liking for the "means" activity through direct experience. They cite contingencies enforced at mealtimes as archetypal examples of a social context in which this learning occurs. "When Mom tells me that I can't have my dessert until I clean my plate, what's left on my plate is usually yucky". Their research revealed that when preschoolers were told a story about a child whose mother introduced two new foods, "hupe" and "hule", through the use of a contingency, the children believed that they would prefer the new food in the "ends" slot to the one presented as a "means". Their data provide evidence that even in the absence of knowledge about the particular foods employed, children understand the implications of placing a food in the instrumental or means component of a contingency, for their liking of that food.

The nutrition surveys described previously have provided important data on typical maternal styles of feeding preschoolers, and the research of Birch and her colleagues has attempted to identify mechanisms whereby preschoolers' eating patterns are learned. However, these studies have not directly addressed whether, and if so, how, the development of obesity in young children is related to issues of autonomy-control in the feeding transaction.

Hilde Bruch (1973), in her classic psychodynamic formulation on the etiology of the eating disorders, has conceptualized autonomy-control in

terms of sensitivity to child-initiated cues indicating nutritional need. Based on extensive psychiatric case studies, Bruch proposes that the developmentally obese are unable to correctly identify hunger, (a learned, rather than innate function) or to distinguish it from physiological or emotional states of arousal. This confusion in hunger awareness, she suggests, results from inappropriate or contradictory maternal reaction to infant-initiated signals. She states "When a mother offers food in response to signals indicating nutritional need, the infant will gradually develop the engram of 'hunger' as a sensation distinct from other tensions or needs. If, on the other hand, a mother's reactions are continuously inappropriate, be they neglectful, oversolicitous, inhibiting or indiscriminately permissive, the outcome for the child will be a perplexing confusion" (p. 56). Bruch integrates her model with some developmental data on mother-infant interaction (Ainsworth & Bell, 1969).

While concurring with Bruch's claim that the child must learn self-regulation of eating, and that this learning is crucially affected and mediated by the responses of the parents, Woody and Costanzo (1981) have pointed to several weaknesses of Bruch's model. First, the notion of a hyposensitivity to internal cues on the part of the obese has not been supported by recent research (Rodin, 1980). Normal-weight individuals appear to be no more aware of internally mediated hunger cues than are the obese. Secondly, Bruch's model does not permit an identification of specific circumstances in which family influences lead to obesity as opposed to some other developmental disorder, i.e. it does not permit differential diagnoses to be made. Finally, the model focuses

exclusively on very early parent-child relations in the development of juvenile obesity with no account of the gradual emergence of self-control and of the extended and evolving influence of parents as socializers throughout childhood.

The autonomy-control dimension is central to Woody and Costanzo's (1981) provocative developmental model of the socialization of obesity-prone behavior. Conceptualizing obesity as a form of social deviance, they conjecture that obese behavioral characteristics typically explained by reference to either maladaptive biological processes (for example, adipose hypercellularity) or to long-standing personality styles of ambiguous origin (for example, externality) are more readily understood as the consequences of socialization practices employed with obese or obesity-prone children.

They propose that parental awareness of cultural norms governing appropriate weight leads to social control strategies that simultaneously sensitize an already obese child's reactivity to food cues and undermine internally mediated eating controls. Parental restrictions on eating behavior thus paradoxically serve to undermine the internalization of self-control. This conceptual framework is consistent with various other general models within social and developmental psychology, which propose compatible perspectives on the socialization origins of external control adjustment, for example Kohlberg's (1963) model of the acquisition of moral and social behavior, Baumrind's (1971) general model of child-rearing and Lefcourt's (1976) model of locus of control of reinforcement. Woody and Costanzo (1981) state that "A wide variety of obvious and important cultural maladaptations has been traced to the process by which

the observed deviance of the individual on a particular dimension is followed by the application of strong external control strategies by socializers (eg. parents) which serve the twofold role of undermining and sensitizing (positively or negatively) stimuli within that domain for the 'deviant'... we would maintain that obese externality is one instance of a process in which strong socialization constraints undermine the self-control of the socialized. This proposal is intriguing not because such socialization constraint causes deviant or maladaptive behaviors, but because despite the best intentions of socializing agents, it induces a style that paradoxically serves to maintain the deviant adjustment, once it has occurred" (p.212).

In support of their theory, Woody and Costanzo cite evidence which suggests that externality in response to food cues precedes other manifestations of externality in the obese. They found (Costanzo & Woody, 1979) that obese children, by about ten years of age, already show externality in response to salient food cues, but that this response style has not yet generalized to non-food cues. This developmental sequence, they suggest, is clearly incompatible with the hypothesis of food-related externality as merely a manifestation of a long-standing personality style.

In an attempt to assess socialization practices and attitudes of parents concerning obesity and weight-related issues, Woody and Costanzo (1981) administered a structured interview to parents of 42 children of varying weight status. The interview covered areas such as the child's eating habits and behaviors, disposition and social adjustment, the effects of various moods and other influences on eating, food preferences

and activity level. Also elicited were the parents' self-report on a few relevant parent behaviors and attitudes about feeding practices and nutritional issues. The authors stated that the child's weight status did not appear to be an overly salient or obvious issue.

The most striking finding was the fact that parents viewed the concomitants of obesity very differently depending on the sex of their child. Greater overweight in boys was associated with less exercise, less emotionality, less social involvement, greater compliance and food preference for meat. Greater overweight in girls was associated with greater influence of mood (both positive and negative) on eating, more parental restraint of eating, more emotionality and greater peer rejection and displeasure with self.

Based on their findings, Woody and Costanzo suggest that parents of obese boys are unlikely to attribute the child's weight problem to his behavior, since these boys are depicted as compliant, agreeable, easy to manage and less in need of food-related restrictions. In contrast, parents of obese girls, they speculate, are more inclined to see the child's obesity in terms of problematic, emotionally driven eating behavior and more apt to take an active role in redirecting and restraining that behavior. They hypothesize that parents of obese girls are likely to "blame" the child's weight problem on a range of eating habits that seem to reflect a lack of self-control and therefore try to instill such self-control by applying parental restrictions on eating. By influencing the standards that the child internalized, these parental concerns and behaviors may be the origins of a "restrained" orientation. Furthermore, given the high correlation between peer rejection and degree

of overweight in girls, a lack of social reinforcers may render the reinforcement available in eating particularly salient to the obese girl. Parental restriction of eating may also enhance the reinforcement value of food. In summary, the authors conclude that internalization of the value of restraint in eating may be accompanied by the emergence of food as an especially prominent reinforcer for the obese girl. Furthermore, they note that "the social deviance associated with an obese adult adjustment is much earlier perceived by parents in the case of female than male children because of prevailing sex role norms concerning attractiveness. As a consequence, the application of constraints and the initiation of developmental over justification processes occur earlier in girls than in boys" (p.233). They propose that parental attitudes and practices towards their adolescent boys would resemble their attitudes towards their preadolescent girls. They add that replication of the study is warranted in view of the small sample size and large number of variables under investigation.

It is possible to extrapolate from Woody and Costanzo's (1981) work regarding differential parental attitudes about the concomitants of obesity in boys and girls, to speculate that obese girls would exhibit greater Disinhibition, as conceptualized by Stunkard and Messick (1985) in their development of the Three-Factor Eating Inventory. Moreover, one might expect that the internalization of Cognitive Restraint would occur later in boys. Adolescent obese boys would be expected to exhibit more Cognitive Restraint than their younger counterparts. No age trend would be predicted for obese girls, however, as they would be expected to exhibit a stable pattern of high restraint from childhood through

adolescence.

Based on the foregoing review, it appears that the autonomy-control dimension of the feeding transaction may be fundamentally related to the development of restrained eating and may account, in part for observed sex differences in restraint in obese and normal weight children and adolescents. Another means by which the development of restraint may be facilitated is via observational learning or modeling. In the following section, a brief overview of modeling or observational learning in children is presented, within a social-learning context. Next, a summary of the literature on modeling of food intake and food preferences in children is reviewed.

Modeling of food intake and restrained eating. Rosenthal and McSweeney (1979) note that eating is a social behavior and that many other complex social behaviors are learned and/or facilitated through modeling processes. The characteristics of the model can be expected to influence subjects' responsiveness to the model's behavior. Similarity between model and observer tends to enhance modeling (Bandura, 1977).

Hall, Lamb, and Permutter (1986) note that the concept of imitation plays a key role in most social-learning accounts of human development. Studies and casual observation demonstrate increasing resemblance of children's social behavior to that of adult models such as parents or teachers. Modeling is also a powerful means of influence in peers. Peer models can induce positive behavior such as altruism, as well as aggression and disobedience. If a child is rewarded for imitating a model, the child will tend to imitate the model on later occasions, even if not rewarded. If the child sees a model rewarded for his or her

actions, the child will tend to copy the rewarded behavior.

Parents are permanent and powerful models for their growing children. They are dispensers of rewards and punishments, and when they are warm and nurturant as well, they are precisely the kind of models that researchers have found to be the most effective. Children who have been allowed time to develop a rewarding relationship with an adult model engage in far more imitation than children who have not (Bandura & Huston, 1961). When parents encourage their children's identification with them and approve of their attempts to imitate them, the modeling becomes even more effective. Furthermore, Kohlberg (1966) has theorized that once the concept of gender constancy has developed, children identify with the same-sex parent, seeking out and adopting their beliefs, attitudes and values.

Birch (1980a) notes that there is some evidence that modeling process are operating to shape preschoolers' food preferences and eating behaviors. In an investigation of the influence of peer model's food selection on preschooler's food preferences and eating behavior, she found that preschoolers' food choices, preferences and consumption patterns were strongly influenced by those of other children. Exposing children to peer models who were selecting and eating the target child's non-preferred food was sufficient to produce more choices of the initially non-preferred food by the target children, even when the initially highly preferred food was offered. Furthermore, the shift in preference persisted for several weeks. Younger children were more affected by modeling than were older children.

Harper and Sanders (1975) investigated the effect of adults' eating

on young children's acceptance of unfamiliar foods. Mothers or "visitors"", i.e. male or female adults who had played with the children for 20 minutes, either offered an unfamiliar food to the child or modelled eating of the unfamiliar food. Subjects were 124 toddlers, aged 14 to 20 months, and 96 children, aged 42 to 48 months. All testing occurred in the subjects' homes. There was a consistent tendency for young children to sample an unfamiliar food more readily when an adult modelled eating, rather than simply offering food. When food was merely offered, mothers' exhortations were more effective in inducing young children to taste new foods than were those of visitors. However, when mothers and visitors both modelled eating, the difference was negligible. According to the authors, the absence of significant interactions between the sex of the model and sex of the subject provided no support for the expectation that children would be influenced by perceived similarities between themselves and the models. Finally, the older children appeared to respond in the same manner as the toddlers.

Some indirect but relevant evidence on modeling is available from the few studies dealing with resemblance in food preferences of parents and their children. For young children, the effects reported are very weak or absent (Birch, 1980b; Bryan & Lowenberg, 1958; McCarthy, 1953).

Birch (1980b) asked nursery schoolers and their parents to taste and rank order their preferences for four different sets of foods. A high percentage of positive but non-significant correlations were obtained for both mother-child and father-child pairs and did not surpass those for unrelated adults. The authors conclude that these results simply reflect a commonality of food preference within a subcultural group as opposed to

an intra-familial commonality.

Finally, Rozin, Fallon and Mandell (1984) had 34 undergraduates and their families complete a questionnaire tapping food preferences. Parent-child resemblances on food preferences were quite small. The data did not support the author's prediction that mother-child correlations would be higher than father-child correlations, based on the observation that the mother typically has more contact with the child and traditionally has a special role in food selection, cooking and monitoring of feeding. Rozin et al cite analyses by Burt and Hertzler and Pliner which revealed no differential effects for mother and father. Similarly, the hypothesis that greater similarity in attitudes to foods would be obtained across same-sexed parent-child pairings, based on notions of modeling, was not confirmed.

In two of the four studies in which significant modeling effects were observed, the model and children were together in the experimental situation. This raises the issue of a possible confound between susceptibility to modeling effects and social desirability, noted in the adult studies described previously. Birch (1980a) in the peer model study, suggests that the persistence of modeling effects on preferences would argue against a social desirability or conformity hypothesis. Rosenthal and Marx (1979), in their taste discrimination study correlated scores on the Marlowe-Crowne Social Desirability Scale and degree of modeling, operationalized as the difference between the models' and subjects' consumption. The correlations were nonsignificant. However, the results of studies by Conger, Costanzo, Wright and Matter (1980) and De Luca and Spigelman (1979) studies suggest that modeling of food

consumption may be inextricably related to self-consciousness or social desirability, at least for some subgroups, particularly obese females.

To date, there have been no studies assessing the effects of modeling on restrained eating in children and adolescents.

Statement of the Problem

The objectives of the present research are threefold. They are: to elucidate the developmental course of restrained eating and to examine its relationship to sex and obesity in children and adolescents; to explore the interrelationships between maternal feeding attitudes (related to autonomy versus control), restrained eating, and obesity in children and adolescents; and to investigate modeling influences on restrained eating.

In order to accomplish these goals, suitable instruments to assess restrained eating in children, adolescents and adults, as well as an instrument to assess maternal feeding attitudes had to be selected or developed. Requirements for measures of restrained eating were as follows: they had to be psychometrically sound, i.e., valid and reliable; they had to be comparable with those used in previous investigations of restrained eating in order to yield interpretable and generalizable findings; child and adolescent forms of the instrument had to be equivalent and subscales had to exhibit sufficient conceptual sophistication to reflect the complexity of the dieting/restraint phenomenon.

The measure selected for adults was the Eating Inventory (Stunkard & Messick, 1985). A simplified version of the Eating Inventory, the Children's Eating Inventory (CEI) was prepared by the present author as was the Feeding Attitudes Questionnaire, designed to measure mothers' attitudes towards autonomy versus control in the feeding transaction.

Developmental course of restrained eating

The first objective of the study is to replicate Davis et al's (1981) investigation of age-related patterns in restrained eating as a function of sex using the total scores of the CEI instead of the Children's Restraint Scale. A large sample of children and adolescents in grades 4-11, unselected as to weight status, were tested. A set of hypotheses based upon Davis et al's findings are proposed. With respect to sex effects, girls are expected to be more restrained than boys in the later grades, i.e. grades 8 to 11. The restraint scores of girls are expected to increase significantly with age, while boys scores are not expected to show any age trends.

A second goal is to extend previous findings by controlling for percent overweight in examining the developmental trends in restraint. To further examine the relationship between percent overweight and restrained eating in a sample of children and adolescents of unselected weight status, additional correlational analyses are undertaken. Two alternative hypotheses have been suggested by the literature. Based on empirical findings of Davis et al (1981), a positive correlation between restraint and percent overweight for both sexes at all grade levels would be predicted. However, a different pattern of results is predicted on the basis of Woody and Costanzo's (1981) preliminary findings regarding differential parental socialization attitudes and practices towards their obese boys and girls. Percent overweight is expected to correlate positively with restraint for girls at all ages, but for boys, percent overweight correlate positively with restraint only at the older age level.

A fourth objective of the present study was to examine the developmental course of each of the three subscales of the CEI reflecting Stunkard and Messick's (1985) factors of Cognitive Restraint, Disinhibition, and Perceived Hunger. It is predicted that adolescent girls would score higher on the Cognitive Restraint scale than adolescent boys. This prediction is based on the similarity of the cognitive restraint scale to Davis et al's restraint measure. As noted, Davis et al found significant differences in restraint only after grade 8. There is insufficient data based on the literature for predictions to be made regarding the developmental course of either Disinhibition or Hunger in a sample of boys and girls of unselected weight status.

Restrained eating and obesity

In order to investigate more directly restrained eating as a function of age, sex, and obesity in children, a subsample of subjects meeting criteria for obesity and normal-weight were selected. The subsample was further divided into young (aged 8 to 12 years) and old (aged 13 to 17 years) groups. Though there is support for increased restraint in obese adults and indirect evidence that obese girls are more likely to restrain in certain social conditions (Isbitsky & White, 1981; Woody & Constanzo, 1981), there is insufficient data to propose a hypothesis regarding restraint score differences as a function of obesity. Restraint scores of obese boys and girls at two age levels will be compared to restraint in normal weight controls.

In addition to examining total CEI scores in these groups, Cognitive Restraint, Disinhibition, and Perceived hunger subscale scores will also be investigated. Again, the literature review suggests no specific

hypotheses with respect to Cognitive Restraint and Perceived Hunger. While some studies suggest that emotional disinhibition may be particularly strong in obese females, this view remains controversial even in adults (Striegel-Moore & Rodin, 1986). The evidence for greater disinhibition in obese girls is very preliminary. Woody & Constanzo (1981) reported that percent overweight was positively and significantly correlated with parents' assessment of the extent to which the child's undesirable eating tended to be triggered by affective stimuli. However, given the preliminary nature of their study and their reliance on parental report, the current study is regarded as an exploratory investigation of obese-normal weight differences in Disinhibition.

Feeding attitudes

Next, the relationship between maternal control, restrained eating and obesity in children and adolescents is considered. First, developmentally, mothers would be expected to assume more control in feeding their younger children than their adolescents. Therefore, a negative correlation between age of the youngsters and maternal control is predicted.

Second, there is also support for the notion that sex may be related to maternal control, with mothers generally more concerned about their daughters' weight than that of their sons, and more apt to monitor and control their daughters' food intake.

Woody & Constanzo (1981) argue that parental concerns regarding obesity and parental conceptualization of the causes of obesity in girls would facilitate controlling feeding attitudes in mothers of overweight girls. On the basis of their work, a significant correlation between

maternal control and percent overweight would be predicted for girls. With regard to boys, Woody and Constanzo proposed that parental attitudes and practices towards their adolescent boys would resemble those toward younger girls. Young obese males, however, viewed by their parents as especially "adjusted" would be considered less in need of food-related restrictions. Alternatively, they suggest, with less conviction, that a restrained orientation is simply more descriptive and pertinent to females than to males. An exploration of the correlational relationships among degree of overweight in male and female children and adolescents, and maternal feeding attitudes is undertaken in the present study. As well, the interrelationships amongst maternal feeding attitudes and youngsters' age, sex and obesity are directly assessed via an analysis of variance design. An complex set of interactions between these variables is expected.

Whether maternal control is related to greater restraint in children will also be explored. There has been some speculation that excessive maternal restriction actually undermines self-control in children. It is difficult to predict whether such maternal restriction would be related to high restraint scores, particularly in the obese. An exploration of correlational relations between maternal feeding attitudes and child restraint is undertaken in the present study.

Modeling effects

While the adult literature has attempted to directly address the notion of modeling of restrained eating, the experimental situations have always been within the constraints of a "one-shot", time-limited social context. In the present study, the issue is whether mothers'

characteristic restraint orientation is correlated with a similar eating style on the part of children and adolescents. The only available literature has involved preschoolers and young adults and has focussed on characteristic self-reported food preferences, willingness to sample novel foods or relatively short-term shifts in food preferences. There have been no studies involving children and adolescents within the age range of the present study and none have directly compared restrained eating in mothers and their youngsters.

Nevertheless, on the basis of general modeling theory, two hypotheses are proposed. First, similarity between a model and an observer enhances modeling (Bandura, 1977), and children, through the process of identification, seek out and adopt the beliefs, attitudes and values of the same-sexed parent (Kohlberg, 1966). Therefore, it is predicted that daughters would model the restraint orientation of their mothers to a greater extent than would sons, i.e., the correlation between restraint scores of mother/daughter pairs would be expected to exceed that for mother/son pairs.

Second, as there is an increasing resemblance of children's social behavior to adult models with age (Hall et al, 1986), it would be expected that the correlation between restraint scores of mother/daughter pairs would be greater for older than for younger girls.

Method

Subjects

Developmental Sample. The original subject pool included 124 boys and 108 girls, in grades 4 through 11 selected from two high schools and four elementary schools in the Montreal area. Four of the schools, i.e. three elementary and one high school were Jewish parochial schools. As such there was a preponderance of Jewish subjects in the study. Socioeconomic status of subjects was not directly assessed. However, the participating schools all served predominantly middle-class areas of the city. Boys ranged in age from 8 to 17 years (mean age 12.9 years). Girls ranged in age from 9 to 17 years (mean age 12.7 years). Height and weight data were available for 186 of these 232 subjects. Missing data were related mainly to absenteeism and, in a few cases, to nonattendance at scheduled weigh-in sessions due to noncompliance or forgetfulness. There was no discernible systematic bias accounting for missing data. Analyses on the development of restrained eating utilize the total sample of 232 subjects. Analyses for which height/weight data are necessary are based on the sample of 186 subjects. Background data on the 186 subjects with height and weight data are summarized in Table 1.

Obese-normal weight comparisons. In order to compare obese and normal weight subjects, children were selected from the 186 on whom height and weight data were available, according to specific criteria outlined below. Because only 14 of the 186 subjects (7.5 percent) were identified as overweight or obese according to these criteria, an additional 21 overweight or obese subjects were recruited from a local children's hospital outpatient weight control program for the obese

Table 1

Mean and Standard Deviation Age and Percent Overweight: Developmental Sample

Group	n[a]	Age		Percent Overweight	
		M	SD	M	SD
Grade 4,5					
Boys	31	9.6	.8	3.8	9.2
Girls	19	9.3	.5	7.9	13.5
Grade 6,7					
Boys	19	11.4	.7	4.8	13.2
Girls	22	11.3	.5	3.6	15.8
Grade 8,9					
Boys	33	13.9	.6	1.0	14.2
Girls	32	13.8	.7	-3.3	16.3
Grade 10,11					
Boys	21	16.2	.4	1.2	8.2
Girls	9	16.2	.7	-8.8	7.3

[a] $n = 186$.

sample. Subjects were also middle-class, urban with mild to moderate obesity (20 to 80 percent) and did not exhibit any significant emotional or academic problems based on interview information with both child and parent.

Obese group. The obese group included 12 boys and 23 girls greater than 20% overweight according to the Baldwin-Wood (Wohl & Goodhart, 1964) weight norms for children, adjusted for height. In addition, all subjects in this group had been rated as overweight or obese by an adult familiar with the subject, either a teacher or school nurse. Costanzo and Woody (1979) have noted that teachers were able to discriminate clearly overweight and normal-weight children with a high degree of accuracy. This sample was further subdivided according to age level. Young obese boys ranged in age from 9 to 12 years, and from 24 to 78 percent overweight. Old obese boys ranged in age from 14 to 15 years, and from 22 to 67 percent overweight. Young obese girls ranged in age from 9 to 12 years, and were 21 to 72 percent overweight. Old obese girls ranged in age from 13 to 16 years, and were 22 to 67 percent overweight.

Normal-weight group. The normal-weight group included 37 boys and 20 girls ranging from -4 to 4 percent overweight. All subjects in this group had been rated as normal-weight by their teacher or school nurse. Again, the sample was further divided into four subgroups according to age level. Young normal-weight boys ranged in age from 9 to 12 years, and from -3 to 3 percent overweight. Old normal-weight boys ranged in age from 13 to 17 years, and from -3 to 3 percent overweight. Young normal-weight girls ranged in age from 9 to 12 years and from -3 to

4 percent overweight. Old normal-weight girls ranged in age from 13 to 16 years, and from -4 to 4 percent overweight.

Background data on age and percent overweight for the 92 subjects identified as obese or normal-weight are summarized in Table 2.

Maternal samples. For those analyses which required data from mothers as well as children, the sample size was 120. Of the 253 mothers who received a questionnaire booklet, 136 completed and returned it. Of the 136 subjects with maternal data, 120 also had height and weight data. Background data on these 120 subjects is provided in Table 3. Of the sample of 92 obese and normal-weight subjects described previously, 54, i.e. 77 percent of obese subjects and 51 percent of normal-weight subjects had complete maternal data. This differential rate of return of maternal questionnaires was attributed to the greater accessibility of mothers of subjects involved in the hospital program, rather than any systematic differences in compliance and is reflected in the somewhat greater percent overweight of the sample with maternal data. Background data on obese and normal-weight subjects with complete maternal data is summarized in Table 4.

Table 5 summarizes the various samples used in the present research.

Procedure

Prior to soliciting the participation of schools, a proposal describing the study was forwarded to the Concordia University Ethics Committee for approval. A copy of the ethical consent is included in Appendix I. In each of the participating schools, specific classes were targeted to provide subjects meeting the age criteria desired. A cover letter describing the study, and consent forms for both maternal and

Table 2

Mean and Standard Deviation Age and Percent Overweight: Obese and Normal Weight Sample

Group	n[a]	Age		Percent Overweight	
		M	SD	M	SD
Obese					
Young					
Boys	6	11.2	1.2	42.3	19.7
Girls	11	10.5	1.1	34.8	16.3
Old					
Boys	6	14.5	0.5	45.0	16.6
Girls	12	14.1	1.0	37.9	12.1
Normal					
Young					
Boys	16	10.3	1.1	-0.1	2.2
Girls	11	10.6	0.9	1.5	2.3
Old					
Boys	21	15.0	1.2	-0.3	2.1
Girls	9	13.8	1.0	-1.2	2.9

[a] $n = 92$

Table 3

Mean and Standard Deviation Age and Percent Overweight: Maternal Sample

Group	n[a]	Age		Percent Overweight	
		M	SD	M	SD
Grade 4,5					
Boys	20	9.6	.9	5.6	14.5
Girls	12	9.6	.8	16.8	17.3
Grade 6,7					
Boys	13	11.5	.8	17.0	23.9
Girls	16	11.6	.7	4.3	14.3
Grade 8,9					
Boys	21	13.8	.7	7.3	21.5
Girls	25	13.7	.7	3.0	20.1
Grade 10,11					
Boys	8	16.3	.7	1.6	12.6
Girls	5	15.8	.8	21.6	37.9

[a] $n = 120$

Table 4

Mean and Standard Deviation Age and Percent Overweight: Obese and Normal Weight Maternal Sample

Group	n[a]	Age		Percent Overweight	
		M	SD	M	SD
Obese					
Young					
Boys	5	11.0	1.2	43.8	21.7
Girls	7	10.1	0.9	28.6	6.3
Old					
Boys	4	14.8	0.5	45.3	11.0
Girls	11	14.1	1.0	39.0	12.1
Normal					
Young					
Boys	8	10.1	1.2	-1.0	1.9
Girls	6	11.0	1.1	1.8	2.6
Old					
Boys	7	14.4	1.5	-.7	2.8
Girls	6	13.3	0.5	-2.3	1.2

[a] n = 54

Table 5

Subsample Summary

Group	n	Boys	Girls
Developmental	232	124	108
Developmental with height/weight Data	186	104	82
Obese			
Young	17 (12)[a]	6 (5)	11 (7)
Old	18 (15)	6 (4)	12 (11)
Normal			
Young	27 (14)	16 (8)	11 (6)
Old	30 (13)	21 (7)	9 (6)
Maternal	136	71	65
Maternal with height/weight Data	120	62	58

[a]number in brackets refers to subjects with maternal data

child participation, were sent home with each student in the targeted classes. Copies of the cover letter and consent form are included in Appendix II and Appendix III.

Procedures varied slightly across schools due to different policies and timetables. Students at four of the elementary schools completed the Children's Eating Inventory and Children's Social Desirability Questionnaire during class time, under the supervision of their teachers. Students at two other elementary schools completed the questionnaires in small groups, at lunchtime, in the library or gymnasium, under the supervision of the author. Participants in the hospital program completed the questionnaires in their usual groups, prior to a scheduled session, under the supervision of the author. Care was taken to ensure that the therapist was absent during the completion of the questionnaires. In all administrations of the questionnaires, communication between subjects was prohibited by the supervising adult. At the end of testing, each subject received a sealed envelope containing another cover letter and information form, a copy of the Feeding Attitudes Questionnaire, the Eating Inventory, the Personal Reaction Inventory, and a stamped, self-addressed envelope, and was instructed to give the packet to his or her mother. The questionnaires were stapled in order, however, it was impossible to ensure that mothers in fact completed them in that order. A copy of the second cover letter and information form are provided in Appendix IV and V.

For each targeted class, an adult familiar with the subjects, whether their teacher or school nurse, received a list of participating students and was asked to rate each on a 4-point scale as follows:

1=underweight; 2=normal weight; 3=overweight and 4=obese. At a later date, subjects were weighed and measured on a standard balance bar scale. Percent overweight was determined according to the Baldwin-Wood (Wohl & Goodhart, 1964) weight norms. Height and weight data were already available for hospital program participants, who had also all been rated as either overweight or obese by the program director.

Measures of Restrained Eating

Eating Inventory. A copy of the Eating Inventory (EI) (Stunkard & Messick, 1985) is included in Appendix VI. In its published form, the EI is a 58 item self-report paper and pencil instrument. However, based on changes in scoring suggested by Dr. Stunkard in a personal communication (1983), six items have been deleted for scoring purposes, namely, items 16, 19, 40, 43, 48 and 50. Total scores range from 0 to 52, with higher scores indicating greater restraint.

The scale is divided in two sections. Part 1 includes 36 forced-choice items in which statements about eating behavior, worded in the first person, are indicated by respondents to be true or false about themselves. Part 2 consists of 16 multiple-choice questions about patterns of weight fluctuation and eating behaviors with a variable response format from 1 to 4 and 0 to 10.

Each item in the scale is intended to reflect one of three factors, identified on the basis of factor analysis, i.e. Cognitive Restraint (22 items) Disinhibition (15 items) and Perceived Hunger (15 items). Items representing each of the three factors are provided in Appendix VI. An example of an item measuring Factor 1, Cognitive Restraint, is Item #4, "When I have eaten my quota of calories, I am usually good about not

eating any more". An example of an item measuring Factor 2, Disinhibition, is Item #2, ""I usually eat too much at social occasions like parties and picnics". An example of an item measuring Factor #3, Perceived Hunger, is Item #3. "I am usually so hungry that I eat more than three times a day". A complete description of the scoring of the 52 item EI is provided in Appendix VI.

Internal reliabilities were reported on several samples. On a combined group of identified "free eaters" (persons typically unconcerned about dieting or weight) and "dieters" (persons typically attempting to control their weight), Stunkard and Messick reported Cronbach alpha coefficients of .92 for Cognitive Restraint or conscious control, .91 for Disinhibition and .85 for Perceived Hunger, indicating that the subscales were highly reliable for the combined sample. The reliabilities of these factors were also stable in the subsamples of dieters and free-eaters. The positive intercorrelations of these factors lend some support for the use and interpretation of total scores on the EI.

The selection of an instrument to measure restrained eating in the present study preceded the publication of Stunkard and Messick's (1985) detailed psychometric analysis of the EI. Furthermore, it seemed desirable to enhance the comparability of the present study with previous investigations of restrained eating using the Restraint Scale. Therefore, a pilot study was undertaken in order to compare the two measures of restrained eating in adults of varying weight status. The results of the pilot study indicated that the two measures of restrained eating were significantly correlated for all weight groups. A complete description of the pilot study is provided in Appendix VII.

In order to evaluate the internal consistency of the EI and its previously identified factors in the present sample, an item analysis was undertaken. This analysis was based on 52 items scored, and used data from the 120 subjects with maternal data. Cronbach's alpha reliabilities were somewhat lower than those obtained by Stunkard and Messick in their combined sample of dieters and free eaters, but were nonetheless highly reliable. Coefficient alphas were .87 for the total scale and .89, .86 and .80 for subscales reflecting Factors 1, 2, and 3, respectively.

Children's Eating Inventory. A copy of the Children's Eating Inventory (CEI) is included in Appendix VIII. The CEI is a simplified version of the EI described previously. The original paper and pencil self-report measure consisted of 55 True/False and multiple-choice items relating to dieting practices and weight fluctuation. Three items were deleted from the 58 item EI due to content inappropriate for children. As well, items corresponding to the six unscored of the original EI, noted previously, were not scored. Thus, scores on the CEI ranged from 0 to 49, with higher scores indicating greater restraint.

In order to render the EI suitable for use with children as young as 8 years, it was modified as follows. First, the format of the scale was simplified so as to enhance its visual clarity. Second, as necessary, items were rewritten in order to simplify vocabulary and/or sentence structure, while preserving the meaning of the item. For example, the word "anxious" was replaced by "nervous" in item #2, "When I feel anxious, I find myself eating. Third, three items were deleted because of content inappropriate to young children. The deleted items included item #27, "My weight has hardly changed at all in the last ten years",

item #49, "How frequently do you avoid 'stocking up' on tempting foods" and item #51, "How likely are you to shop for low calorie foods". Those items derived from the Restraint scale have been replaced by equivalent items from the Children's Restraint Scale. Whenever possible, original items from the EI were retained in the CEI, in order to maximize comparability between the child and adult measures. Scoring is identical to that described for the EI.

A pilot study was undertaken in order to evaluate the reliability and validity of the CEI. Subjects included 38 elementary school children, aged 7 to 13 years.

Subjects completed the CEI and Davis et al's (1981) Children's Restraint Scale in small groups, under the supervision of the author, at lunchtime, in the gymnasium. Thirty-three subjects were retested following a one week interval.

Means, standard deviations and ranges for both measures of restrained eating for both the first administration and retest are provided in Appendix IX. The Pearson Product Moment Correlation Coefficient for the two measures of restrained eating was $r=.58$, $p= .001$ and $r=.67$, $p=.001$ for the first administration and retest, respectively, indicating reasonable concurrent validity.

For the CEI, the test-retest reliability coefficient was $r=.87$, $p=.001$. Although the CEI has not been factor analyzed, as a preliminary investigation subscale reliabilities were determined for subscales corresponding to the factor structure identified in the EI. Subscale 1 was the most stable, $r=.80$, $p<.001$. Subscales 2 and 3 were also reasonably stable, with $r=.75$, $p=.001$ and $r=.67$, $p=.001$, respectively.

Cronbach's alpha, calculated to determine the internal consistency of the CEI, was .74 for the total scale. The Cognitive Restraint subscale demonstrated good internal reliability, alpha = .84, with alphas of .67 and .68, respectively, for the Disinhibition and Hunger subscales. On the basis of these findings, it was deemed reasonable to proceed with the use of this scale in the present research.

The internal consistency of the CEI was reevaluated using the expanded data base of the developmental sample of 232 and the hospital sample of 21 subjects. Cronbach's alphas of .79, .88, .67 and .76 were obtained for the total scale and subscales 1, 2 and 3 respectively. These results suggest that the total scores, as well as scores for subscales 1 and 3 appear to be quite robust, with subscale 2 exhibiting adequate, but somewhat lower, internal reliability.

Restrained eating: Use of Total and Factor/Subscale scores

As noted previously, neither the comprehensive psychometric evaluation of the factor structure of the EI, nor literature on follow-up studies using factor scores was available at the time the present research was conceptualized and data collected. The calculation of a total restraint score seemed appropriate given the good correlation between total scores of both the EI and the CEI with their respective Restraint Scale counterparts, demonstrated in the two pilot studied described previously. Furthermore, the total scale internal reliability of both the EI and CEI were high in the present adult, child and adolescent samples. Finally, the absence of data on the factor structure of the CEI provided further justification for reporting total scores.

However, given recent developments, notably the demonstration of the

conceptual and practical significance of the multidimensionality of the restraint construct, it seemed desirable to attempt at least a preliminary investigation of the subscales representing Stunkard and Messick's (1985) factors, with respect to the principal hypotheses of the present study. Therefore, where applicable, analyses based on both total and subscale restraint scores are presented, with the knowledge that the integrity and generalizability of the Stunkard and Messick factors to the present sample of adults and youngsters, remain to be demonstrated.

Measures of Social Desirability

Marlowe-Crowne Social Desirability Scale. The Marlowe-Crowne Social Desirability Scale (MC-SDS) (Crowne & Marlowe, 1960) is a 33 item self-report paper and pencil instrument in which the respondent indicates whether statements concerning personal attitudes and traits are true or false about him or her. The score is the total number of socially desirable responses endorsed by the respondent. A copy of the scale, entitled "Personal Reaction Inventory, is included in Appendix X.

A major objective in the development of the MC-SDS was the elimination of pathology relevant item content which had characterized previous social desirability scales (Edwards, 1957). Social desirability was defined broadly to refer to the need of individuals to obtain approval by responding in a culturally appropriate and acceptable manner.

The internal consistency coefficient for the final form of the scale, using the Kuder-Richardson Formula was .88. This was computed on 39 subjects, 10 males and 29 females enrolled in an undergraduate abnormal psychology class at Ohio State University. The mean age of the sample was 24.4 years, with a range of 19 to 46 years. Test-retest

reliability was .89 for 31 subjects who took the scale on two occasions separated by a one month interval. A mean of 13.72 and standard deviation of 5.78 were obtained on a sample of 1320 subjects, including 81 students in a course on exceptional children, as well as the 39 abnormal psychology undergraduates noted previously. The correlation between the MC-SDS and the Edwards (1957) scale, also based on this sample was .35, $p<.01$. In addition, there was a general trend towards positive correlations between the social desirability scales and the validity scales of the MMPI, and negative correlations with most of the clinical scales.

Children's Social Desirability Questionnaire. The Children's Social Desirability Questionnaire (CSD) (Crandall, Crandall & Katkovsky, 1965) was patterned after the MC-SDS discussed previously. The CSD is a paper and pencil self-report instrument which presents a child with 48 True/False items. Some items ask a child if he or she always behaves in some particular fashion which is prescribed by middle-class American mores, or always hold such attitudes and beliefs. Other items ask if the respondent never does, or thinks of doing, those things which are disapproved in this culture. Still other items pose an unacceptable behavior or attitude and ask whether the respondent sometimes thinks or acts in this fashion. Twenty CSD items from the MC-SDS were rephrased in simpler language, suitable for children. The remaining items were constructed to sample a range of social experience common to school-age children. The possibility of acquiescence response sets was minimized by keying 6 of the 48 items so that the respondent must answer "true", and 22 so that the respondent must answer "false", in order to appear

socially acceptable.

The standardization sample was drawn from five different schools, located in southern Ohio. The CSD was administered to 956 grade 5, 6, 8 and 12 students, in group sessions. The score on the CSD is the total number of items answered in a socially desirable direction.

A special format of the SCD was devised for children below the 6th grade level. In this questionnaire, a Yes/No choice was substituted for True/False, and some questions were simplified. Brannigan (1974) administered both the Yes/No and True/False forms of the CSD to 43 5th graders with a one week interval between testing. The means for the two scales did not differ significantly. The correlation between them is significant, $r=.85$, $df=42$, $p<.001$. Copies of both forms of the CSD are included in Appendix XI.

Split-half (odd-even) reliability coefficients ranged from .82 to .95 for subsamples of boys and girls at various age levels. Test-retest reliability was examined in only part of the total sample. The direct question (Yes/No) form of the CSD was readministered after a month interval to 63 of the younger children. The correlation between the first and second administrations was .90. The True/False form of the questionnaire was readministered to 98 tenth graders after a one month interval and produced a correlation of .85. Means range from approximately 11 to 31 and standard deviations from about 7 to 11, depending on the age and sex of the subjects. There was a tendency for older children to give significantly fewer socially desirable responses, and for girls to give significantly more socially desirable responses than boys.

Feeding Attitudes Questionnaire. A copy of the Feeding Attitudes Questionnaire (FAQ) is provided in Appendix XII. A description of the development of the FAQ is provided in Appendix XIII. The FAQ is a 22 item self-report paper and pencil instrument which assesses attitudes about child-rearing practices related to feeding. Specifically, items tap that aspect of feeding related to the degree of permissiveness versus control endorsed by the respondent. The response format of the FAQ is a 6-point Likert type scale with response options ranging from 1=agree strongly to 6=disagree strongly. Possible scores range from 22 to 132, with higher scores indicating greater permissiveness. Each item in the scale is intended to reflect one of four aspects of feeding including: (1) food selection, for example, "Children should not have to eat foods they dislike, just to be polite"; (2) timing of eating, for example, "Children should not eat more than three times per day"; (3) amount consumed, for example, "Children should be permitted to eat as much or as little as they want"; and (4) use of food as reinforcement, for example, "An effective way to persuade children to eat foods they dislike is to promise them their favorite dessert".

The possibility of acquiesence response sets was minimized by keying 11 of the 22 items so that the respondent must agree, and 11 so that the respondent must disagree, in order to appear to hold permissive attitudes. An asterisk appears beside the number of those items in Appendix II on which agreement reflects a permissive attitude.

FAQ scores were available on 133 mothers in the present study. The mean FAQ score was 92.5, with a standard deviation of 13.4. FAQ scores ranged from 63 to 128.

An examination of the internal consistency of the FAQ, based on 124 questionnaires with complete data, yielded Cronbach's Alphas of .78 for the total scale, .52 for the food selection subscale and .73 for the amount consumed subscale. These results indicate that the total scale and amount consumed subscales demonstrate adequate internal reliability. On the basis of the foregoing psychometric analysis of the scale, only total scores were used in the present research.

Results

Developmental Course of Restrained Eating

Replication study. The first objective of this section was to attempt to replicate Davis et al's (1981) investigation of age-related patterns in restrained eating as a function of sex, using the CEI instead of the Children's Restraint Scale. Davis et al found that significant sex differences in restraint, with girls obtaining higher scores than boys, emerged at the later grade levels, specifically after grade 8, although girls scored higher at all grade levels. Furthermore, while the restraint scores of girls increased as a function of increasing grade level, boys' scores showed no age trends.

Data from the original pool of 232 subjects of unselected weight status described previously, including 124 boys and 106 girls was used. The subjects were further subdivided into four groups according to grade level. Each group included two grade levels, from 4 through 11. Boys ranged in age from 8 to 17 years (mean age 12.9 years). Girls ranged in age from 9 to 17 years (mean age 12.7 years).

Means and standard deviations of CEI scores for boys and girls in grades 4 through 11 are presented in Table 6. A two-way (2X4) analysis of variance was performed on these data to investigate the effects of sex and grade level on restrained eating. Results of this analysis are presented in Table 7 and depicted graphically in Figure 1.

Three significant effects, i.e. two main and one interaction effect, were obtained. The main effects included one for Grade, $F(3,224)=4.02, p=.018$, and one for Sex, $F(3,224)=6.29, p=.013$. These

Table 6

Mean and Standard Deviation Children's Eating Inventory Scores: Replication Study

Group	n[a]	M	SD
Grade 4,5			
Boys	33	23.2	6.4
Girls	24	20.8	5.6
Grade 6,7			
Boys	20	19.9	5.2
Girls	25	20.9	7.7
Grade 8,9			
Boys	42	16.3	5.4
Girls	38	20.7	7.6
Grade 10,11			
Boys	29	17.0	6.3
Girls	21	21.8	8.4

[a] n = 232

Table 7

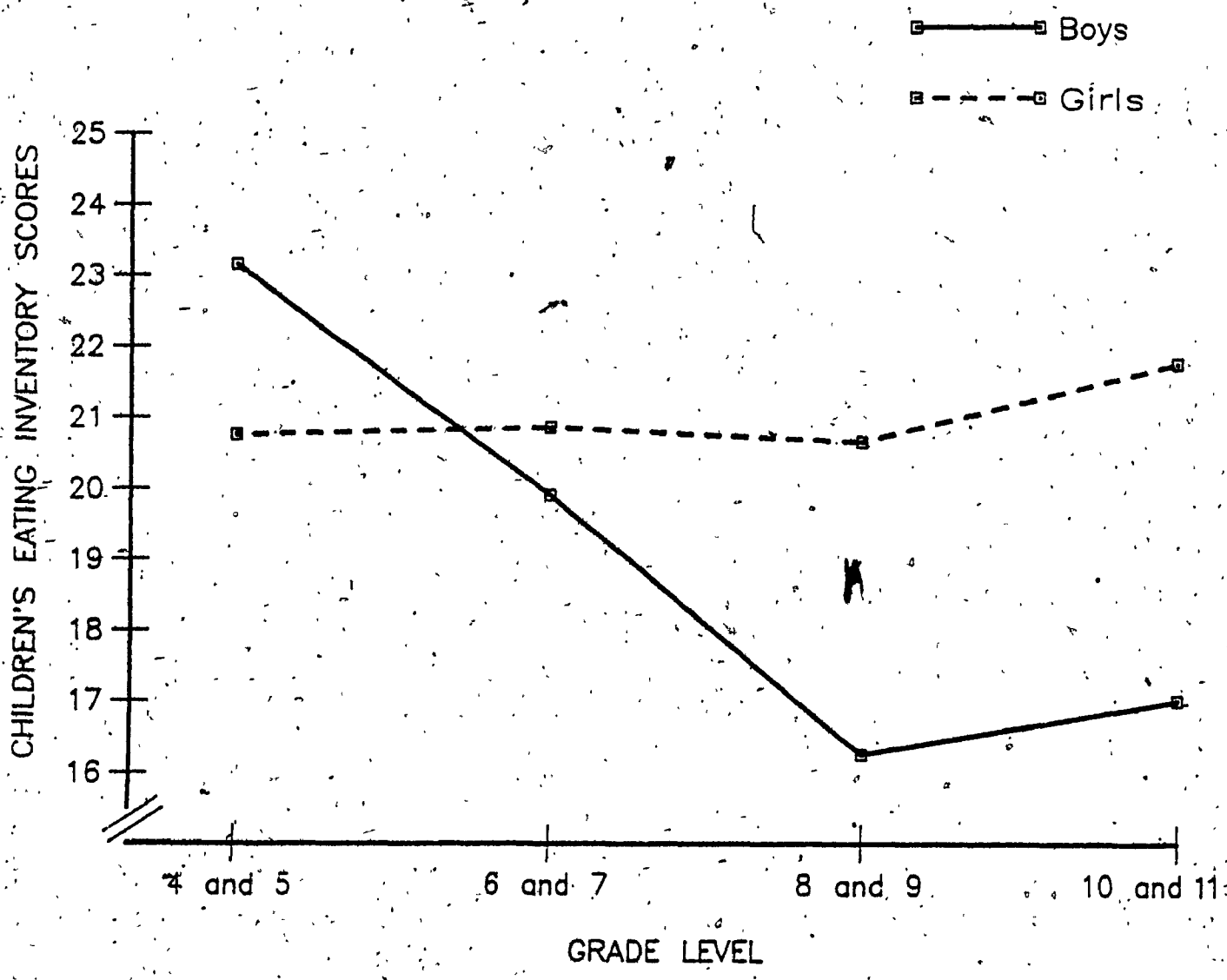
Analysis of Variance Children's Eating Inventory Scores: Replication Study

Source	SS	df	ms	F	Prob. F
Grade	533.63	3	177.71	4.02	.018
Sex	278.12	1	278.12	6.29	.013
Interaction Grade X Sex	483.44	3	161.15	3.65	.013
Error Within	9899.63	224	44.19		
Total	1194.31	231	48.46		

FIGURE 1

Developmental Course of Restrained Eating

Replication Study



significant main effects were moderated by a significant Grade by Sex interaction effect, $F(3,224)=3.65, p=.013$.

Tests for simple effects (Winer, 1971) on the means involved in the Grade by Sex interaction indicated that girls were more restrained than boys at the two highest grade levels, i.e. from grades 8 through 11. Results of the tests for simple effects are presented in Appendix XIV.

The Davis et al, (1981) findings were partially replicated in that girls were significantly more restrained than boys only after grade 8. With respect to developmental trends in restrained eating, within each sex a somewhat different pattern than obtained by Davis et al emerged. The restraint scores of girls remained stable, i.e. were consistently high from the earliest to the latest grades, rather than increasing. Boys' scores dropped as a function of increasing grade level. The end result, however, is similar, with the gap in restraint appearing between the sexes at the higher grade level.

Covariance study. A second objective of the present study was to reexamine the development of restraint, taking into consideration two additional variables of potential relevance, i.e. percent overweight and social desirability.

First, in view of the controversy, described previously, regarding the relationship between obesity and restrained eating, the Pearson Product Moment Correlation Coefficient between percent overweight and CEI scores was calculated for those subjects of the sample of 232, for whom height/weight data was available, $r(186) = .37$, $p=.000$. On the basis of this correlation, it was decided that the effects of percent overweight ought to be statistically controlled, when restrained eating is examined

as a function of sex and grade level.

Second, as noted previously, social desirability and restraint may be related in adults, and the relationship between these two variables remains unexplored in children and adolescents. The Pearson correlation between social desirability and restraint scores for the 186 subjects for whom height/weight data was available was in fact nonsignificant, $r(186) = .06$, $p=.21$, and as such, it was deemed unnecessary to covary social desirability from the analysis of age-related patterns in restrained eating as a function of sex.

Means, standard deviations and adjusted means on CEI[a] scores for boys and girls in grades 4 through 11 are presented in Table 8. A two-way (2X4) analysis of covariance was performed on these data with percent overweight as the covariate, i.e. the effects of sex and grade level on restrained eating were assessed with the influence of percent overweight statistically controlled. Results of this analysis are presented in Table 9 and depicted graphically in Figure 2.

The pattern of results was very similar to that obtained in the replication study described previously. Three significant effects were obtained, i.e. main effects for Grade, $F(3,177) = 4.28$, $p=.006$ and Sex, $F(3,177) = 7.89$, $p=.005$ and a Grade by Sex interaction, $F(3,177) = 3.99$, $p=.008$.

Results of tests for simple effects on the 8 means involved in the Grade by Sex interaction are presented in Appendix XV. Again, girls were significantly more restrained than boys only after grade 8. Significant differences in restraint as a function of grade were obtained only for boys, while girls' restraint scores remained consistently high from the

Table 8

Mean and Standard Deviation Children's Eating Inventory Scores and Adjusted Means (Adj.)[a]

Group	n[b]	m	SD	Adj. m
Grade 4,5				
Boys	31	23.1	6.6	22.7
Girls	19	21.7	5.5	20.5
Grade 6,7				
Boys	19	19.5	5.2	18.9
Girls	22	21.3	7.0	20.9
Grade 8,9				
Boys	33	15.5	4.5	15.6
Girls	32	20.4	8.2	21.3
Grade 10,11				
Boys	21	16.2	6.0	16.3
Girls	9	18.4	9.4	20.4

[a]adjusted for the effect of the covariate

[b]n = 186

Table 9

Analysis of Covariance: Children's Eating Inventory

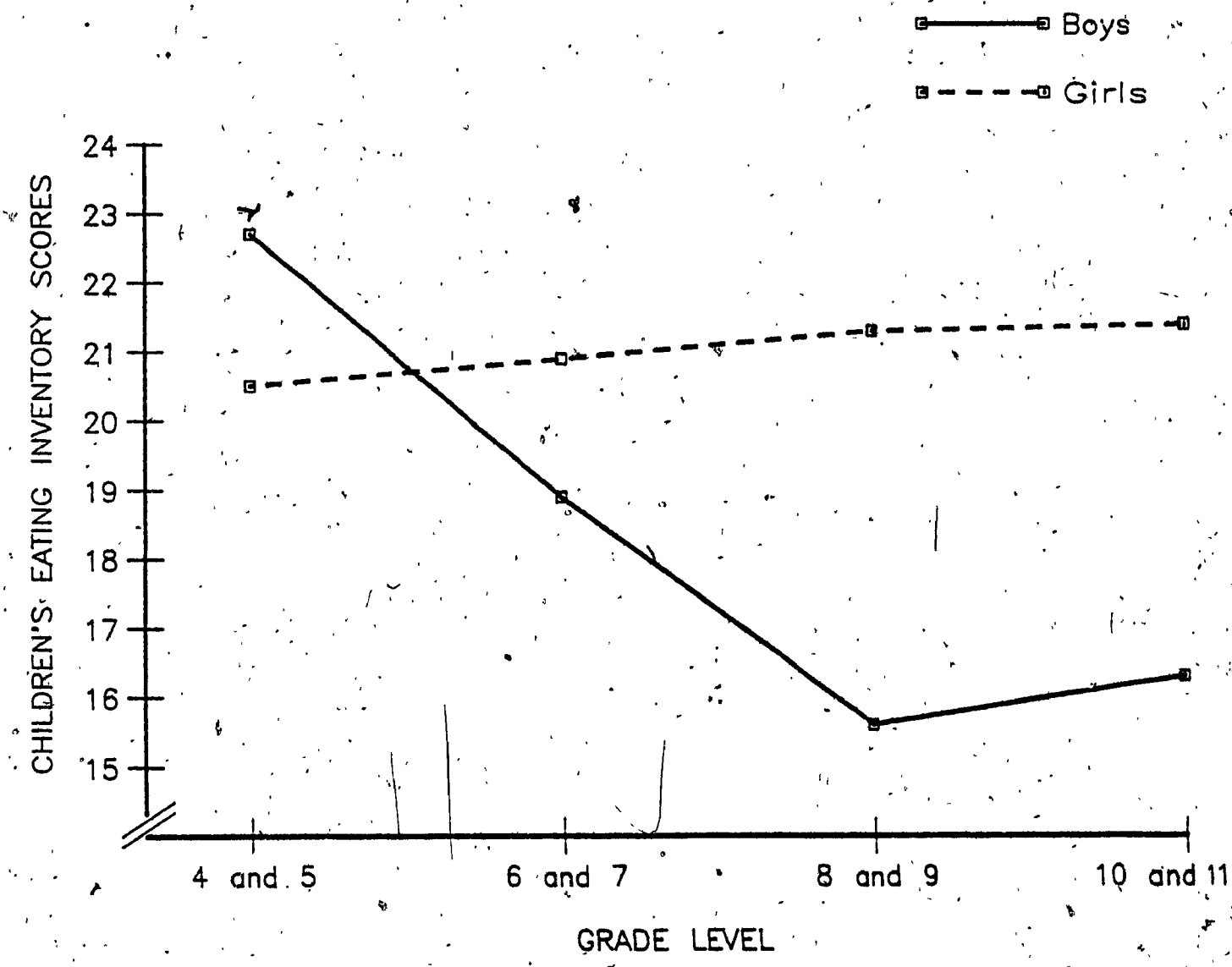
Source	SS	df	ms	F	Prob. F
Grade	467.1	3	155.7	4.28	.006
Sex	287.0	1	287.0	7.89	.005
Interaction Grade X Sex	435.3	3	145.1	3.99	.008
Error Within	6439.7	177	36.4		
Regression	1053.4	1	1053.4	28.75	.000
Constant	67595.0	1	67595.0	1857.90	.000

Note n = 186

FIGURE 2

Developmental Course of Restrained Eating

Covariance Study



earliest to the latest grades.

Somewhat different samples were used in the developmental study (n=232) and the second study with percent overweight covaried (n=186) due to missing height/weight data on 46 subjects. In order to ensure that results were not unduly influenced by sample discrepancies, it was decided to rerun the replication study using only the same 186 subjects included in the covariance study. The analysis of variance on the sample of 186 subjects yielded similar results to that on the sample of 232 subjects.

Correlations: percent overweight and restrained eating.

In further exploring the relationship between percent overweight and restrained eating in children and adolescents, two alternative patterns of results were predicted. Davis et al, in their investigations of age and sex-related patterns in restrained eating, did examine the correlations between percent overweight and restrained eating for both sexes at all grade levels. The authors found a positive correlation between restraint and percent overweight for both sexes at all grade levels. However, a different pattern of results was suggested based on Woody and Costanzo's (1981) preliminary findings regarding differential parental socialization attitudes and practices towards their obese and obesity-prone boys and girls. Percent overweight was expected to correlate with restraint for boys only at the older ages, while for girls, a positive correlation would be expected in younger, as well as older girls.

In order to test these hypotheses, boys and girls from the unselected sample for which height and weight data were available were identified as

young (aged 8 to 12 years) or old (aged 13 to 17 years) to correspond to Woody and Costanzo's child and adolescent samples, respectively. Pearson Product Moment Correlation Coefficients for percent overweight and CEI scores are presented in Table 10. In this analysis, as in subsequent analyses in the present study, the Bonferonni procedure of determining the significance of correlations is used (Larzelere & Mulaik, 1977). The Bonferonni correction indicated that the significance level, in this instance (alpha is set at.05 with 7 correlations in the "family") was .007. First, as noted previously, a positive and significant correlation was obtained, overall, between restraint and percent overweight for the total sample, $r(186)=.37, p=.000$, as well as for boys, $r(104)=.34, p=.000$ and girls, $r(82)=.42, p=.000$ considered separately. The correlation between percent overweight and CEI scores was statistically significant in all age and sex groups except for young girls. In the latter group, the correlation approached significance. Thus, predictions based on Woody and Costanzo's (1981) preliminary findings and speculations were not supported by the data.

Children's Eating Inventory: Subscale analysis. A third objective of the present section was to examine the developmental course of each of the three subscales of restrained eating, reflecting Stunkard and Messick's (1985) factors, i.e. Cognitive Restraint, Disinhibition and Hunger. Mean and standard deviation subscale scores for the 209 subjects of unselected weight status for whom complete subscale data are available, are presented in Table 11. The slight shift in the number of subjects is due to the manner in which incomplete data were handled. The sample was divided into young and old groups corresponding to grades 4

Table 10

Correlations: Percent Overweight and Children's Eating Inventory Scores

Group	n	r[a]	Prob. R
Total	186	.37	.000*
Boys	104	.34	.000*
Girls	82	.42	.000*
Young Boys	49	.37	.000
Old Boys	55	.26	.000
Young Girls	41	.26	.048
Old Girls	41	.52	.000*

[a] r Pearson Product Moment Correlation Coefficient

* $p < .001$.

Table 11

Subscale Means and Standard Deviations Children's Eating Inventory: Developmental Sample

		Restraint		Disinhibition		Hunger	
Group	n[a]	m	SD	m	SD	m	SD
Young							
Boys	47	8.4	3.8	4.8	2.8	7.4	3.2
Girls	45	9.3	4.3	4.1	2.6	6.3	3.1
Old							
Boys	65	3.5	3.3	4.3	2.4	7.7	2.7
Girls	52	8.5	5.3	5.1	3.0	5.8	3.4

[a] $n = 209$

through 7 and grades 8 through 11, respectively. Subscale intercorrelations based on these data are shown in Table 12. Given the presence of significant subscale intercorrelations, a two-way (2X2) multivariate analysis of variance was performed on these data in order to determine the effect of sex and age level on each of the three subscales of the CEI. Results of this analysis are presented in Table 13 and depicted graphically in Figures 3, 4 and 5.

All three multivariate effects were significant, using Wilks test of significance (Tabachnick & Fidell, 1983). The main effects included one for Sex, $F(3,203)=12.25$, $p=.000$, and one for age, $F(3,203)=10.46$, $p=.000$. The multivariate interaction effect for Age by Sex was also significant, $F(3,203)=5.71$, $p=.000$.

In order to determine the source of significance of the multivariate effects, univariate tests of significance were examined. Regarding the Cognitive Restraint subscale, there was a significant main univariate effect for Sex, with girls scoring higher, overall, than boys, $F(1,205)=29.72$, $p=.000$. A significant main univariate effect for Age was also obtained, with young subjects scoring, overall, higher than old subjects, $F(1,203)=28.10$, $p=.000$. However, this significant main univariate effect is moderated by a significant univariate interaction effect for Age by Sex, $F(1,205)=12.35$, $p=.000$, indicating that the age effect, i.e. a drop in restraint with increasing age, was significant for boys only. Girls' scores remained stable across age and girls' and boys' scores seemed to differ only at the old age level, i.e. grade 8 and above.

Regarding the Disinhibition subscale, a significant univariate Age

Table 12

Subscale Intercorrelations Children's Eating Inventory: Developmental Sample

Subscale	Restraint	Disinhibition	Hunger
Restraint	---	.02 (215)[a]	-.31* (210)
Disinhibition		---	.43* (219)
Hunger			---

[a]Number in brackets indicates number of cases on which correlations are based.

* $p < .000$

Table 13

Manova Summary Table Children's Eating Inventory Developmental Sample[a]

Source	Multi F	Prob. Multi F	DV	Uni F	Prob. Uni F
Total	719.79	.000	Restraint	596.32	.000
			Disinhibition	590.52	.000
			Hunger	1022.96	.000
Sex	12.25	.000	Restraint	29.72	.000
			Disinhibition	.13	.717
			Hunger	12.52	.000
Age	10.46	.000	Restraint	28.10	.000
			Disinhibition	.25	.620
			Hunger	.01	.935
Interaction Age X Sex	5.71	.000	Restraint	12.35	.000
			Disinhibition	3.92	.049
			Hunger	.87	.352

[a] $n = 209$

Note: For multivariate F's, df = (3,203) For univariate F's, df = (1,205)

FIGURE 3

Developmental Course of Restrained Eating

Cognitive Restraint Subscale

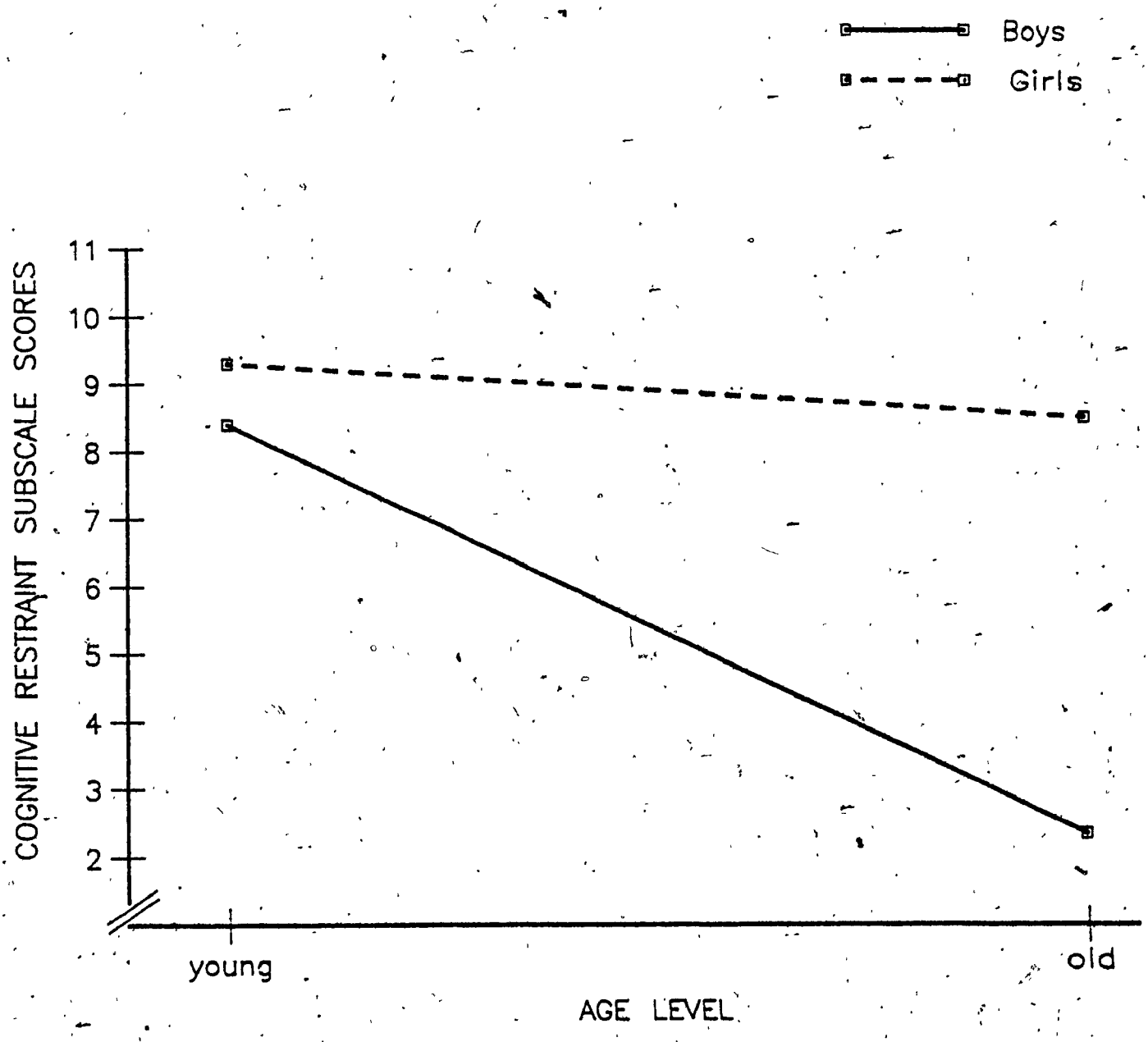


FIGURE 4

Developmental Course of Restrained Eating Disinhibition Subscale

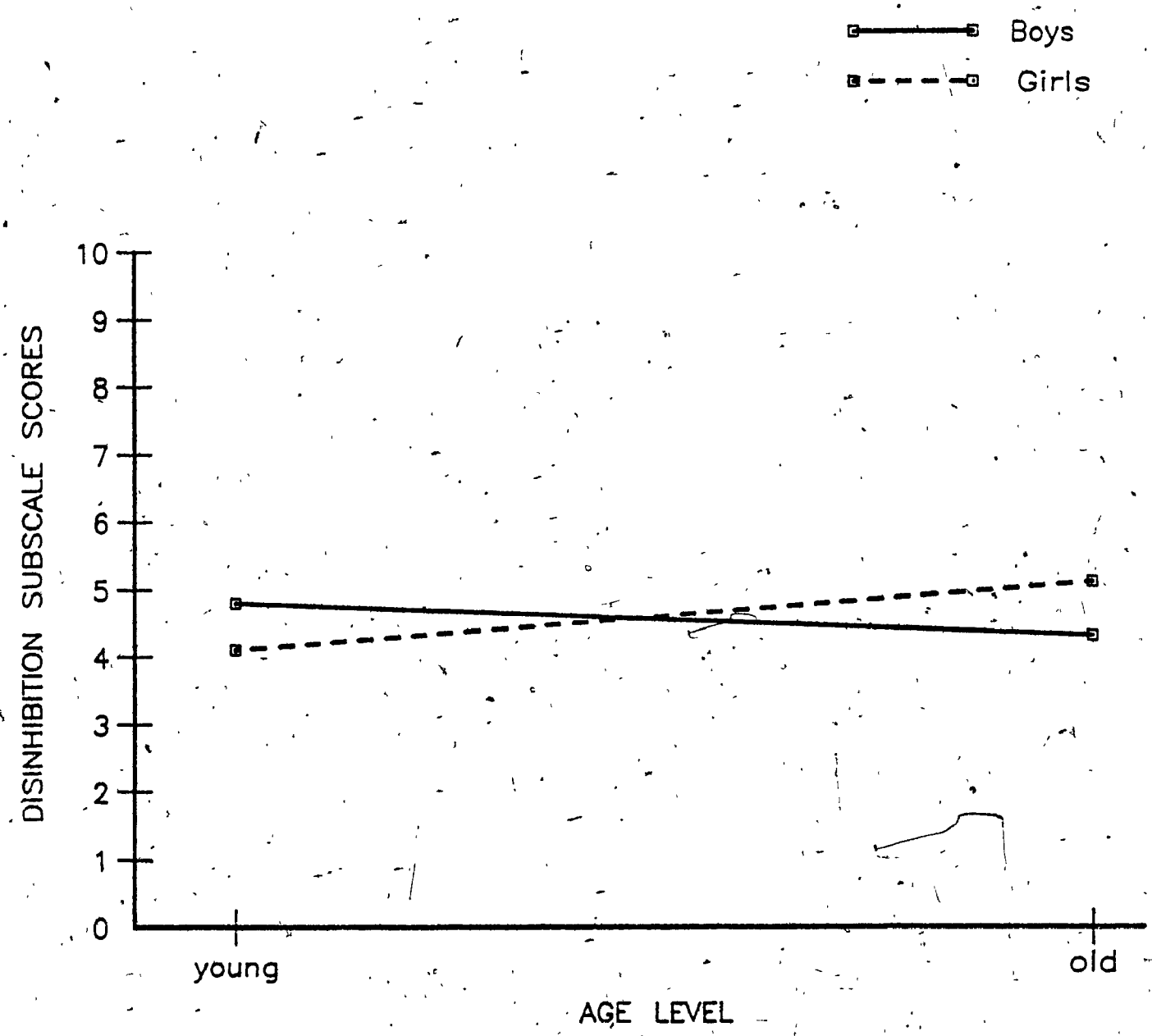
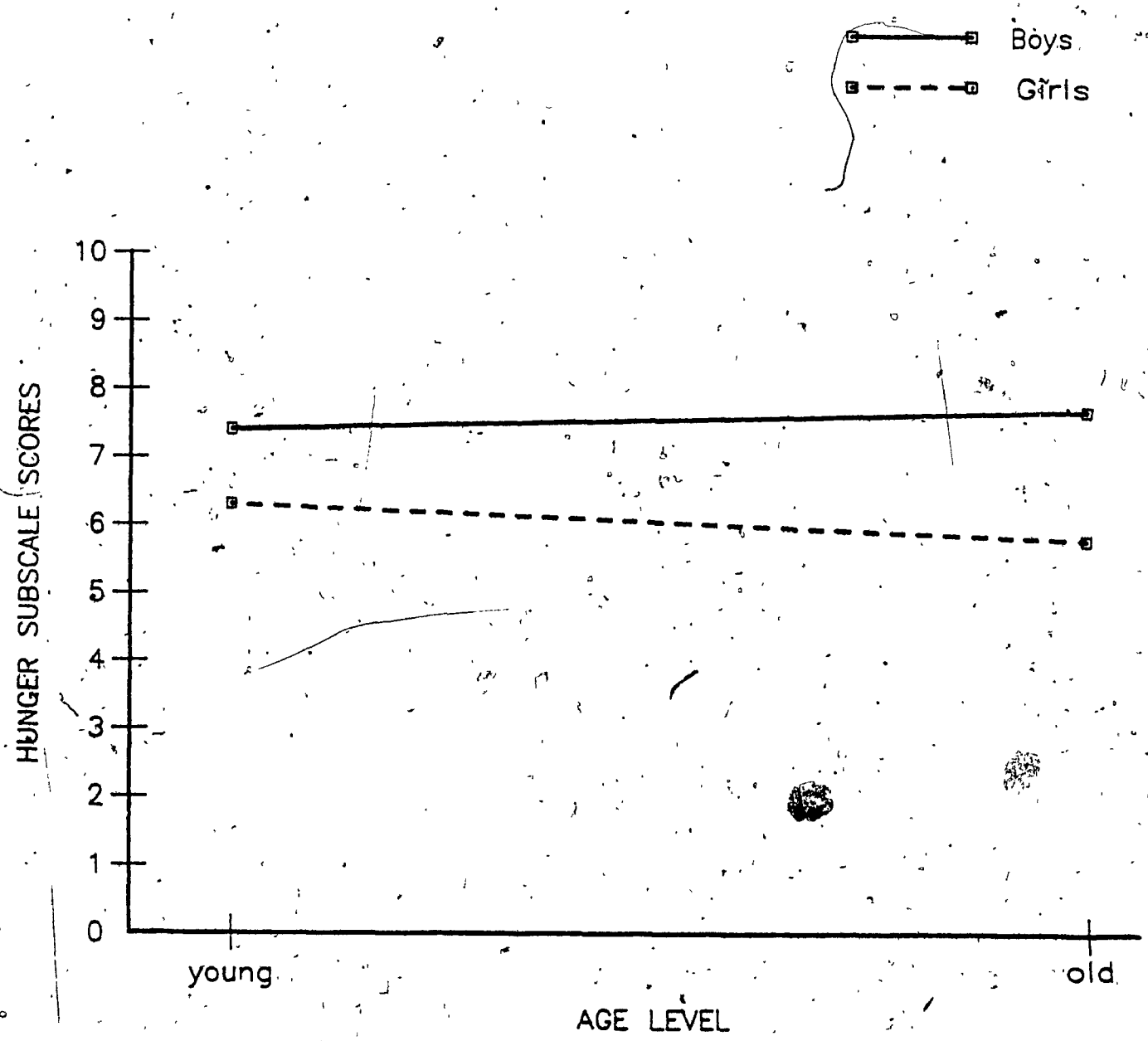


FIGURE 5

Developmental Course of Restrained Eating

Hunger Subscale



by Sex interaction effect was obtained, $F(1,205)3.92, p=.05$, indicating that while girls' scores on this subscale appeared to increase at the older age level, boys' scores remained stable across age.

Finally, on the Hunger subscale, a significant univariate main effect for Sex was obtained, with boys scoring higher, overall, than girls, $F(1,205)=12.52$, $p=.000$.

Developmental Patterns of Restrained Eating in Obese and Normal-Weight Boys and Girls

In order to compare the development of restrained eating in obese and normal weight children and adolescents, a sample of 92 subjects identified as obese or normal weight were selected as described previously. The aim of the analysis to be presented was to determine the effects of age, sex and weight on restrained eating.

Background data on age and percent overweight for the 92 subjects are summarized in Table 2. First, in order to determine whether young and old, obese and normal-weight boys and girls were appropriately equated with respect to age and percent overweight, two three-way (2X2X2) analyses of variance were performed on these data to assess the effects of age, weight and sex on age and percent overweight. Results of these analyses are presented in Appendix XVI and Appendix XVII.

Regarding the analysis for age, a significant main effect, $F(1,84)=317.65$, $p=.000$ was obtained, indicating that young and old groups were highly differentiated. However, this main effect was qualified by an unexpected significant three-way interaction effect for Age by Weight by Sex, $F(1,84)=4.06$, $p=.047$. Tests for simple effects on the means involved in the interaction indicated that there were two significant

two-way interactions, i.e. for Age by Weight, $F(1,84)=4.23$, $p=.042$ for boys, and an Age by Sex interaction, $F(1,84)=7.69$, $p=.006$ for normal weight subjects. Results of these tests for simple effects are presented in Appendix XVIII.

The latter effect indicates that young, normal weight girls whose mean percent overweight was 1.5 were significantly heavier than their older counterparts whose mean percent overweight was -1.2. However the effect is based on an actual difference of 2.7 percent overweight, one so negligible as to be clinically insignificant and not visible to an observer. The former effect indicates that old, normal weight boys in this sample were older than their female counterparts, by slightly more than one year.

These discrepancies were not sufficiently critical to preclude examining the effects of age on restrained eating.

Regarding the analysis of variance for percent overweight, as expected, a significant main effect for weight status was obtained, $F(1,84)=350.42$, $p=.000$, indicating that obese and normal weight groups were highly differentiated. No other significant main or interaction effects were obtained, suggesting that young and old groups of both sexes were equated with respect to percent overweight.

As in the previous study of the developmental course of restrained eating as a function of sex, the correlation between Children's Eating Inventory and social desirability scores were computed, and a nonsignificant relationship was obtained for this sample, $r(92)=.12$, $p=.126$.

Given the results of the foregoing analyses of variance on age and

percent overweight, and correlational analyses on social desirability and restraint, it was deemed unnecessary to control any of the variables statistically, in examining the effects of sex, age and weight on restrained eating in children and adolescents. Means and standard deviation of Children's Eating Inventory scores are presented in Table 14. A three-way analysis of variance was performed on these data. Results of the analysis are presented in Table 15 and depicted graphically in Figure 6.

Five significant effects, i.e. three main and two interaction effects, were obtained. First, there was a significant main effect for age, $F(1,84)=4.08$, $p=.046$, indicating that, overall, young subjects scored higher on restraint than old subjects. Next, there was a significant main effect for sex, $F(1,84)=8.49$, $p=.004$, indicating that, overall, girls were more restrained than boys. Third, a significant main effect for weight, $F(1,84)=33.77$, $p=.000$, indicated that overall, obese subjects were more restrained than normal-weight subjects.

However, these significant main effects are moderated by a significant Age by Sex interaction effect, $F(1,84)=5.93$, $p=.016$, and a significant Age by Weight interaction effect, $F(1,84)=10.81$, $p=.001$. Tests for simple effects on the means involved in the Age by Sex interaction indicated that young boys scored significantly higher on the CEI than did old boys, $F(1,84)=16.39$, $p=.000$, consistent with the findings of the developmental study described previously. For old subjects, girls scored higher than boys. The other means did not differ significantly from one another.

Regarding the Age by Weight interaction, test for simple effects

Table 14

Mean and Standard Deviation Children's Eating Inventory Scores: Obese and Normal Weight Sample

Group	n[a]	m	SD
Obese			
Young			
Boys	6	26.3	4.0
Girls	11	25.0	6.6
Old			
Boys	6	27.3	6.5
Girls	12	30.5	4.6
Normal			
Young			
Boys	16	22.5	5.6
Girls	11	22.1	7.3
Old			
Boys	21	15.0	5.0
Girls	9	17.8	8.0

[a] $n = 92$

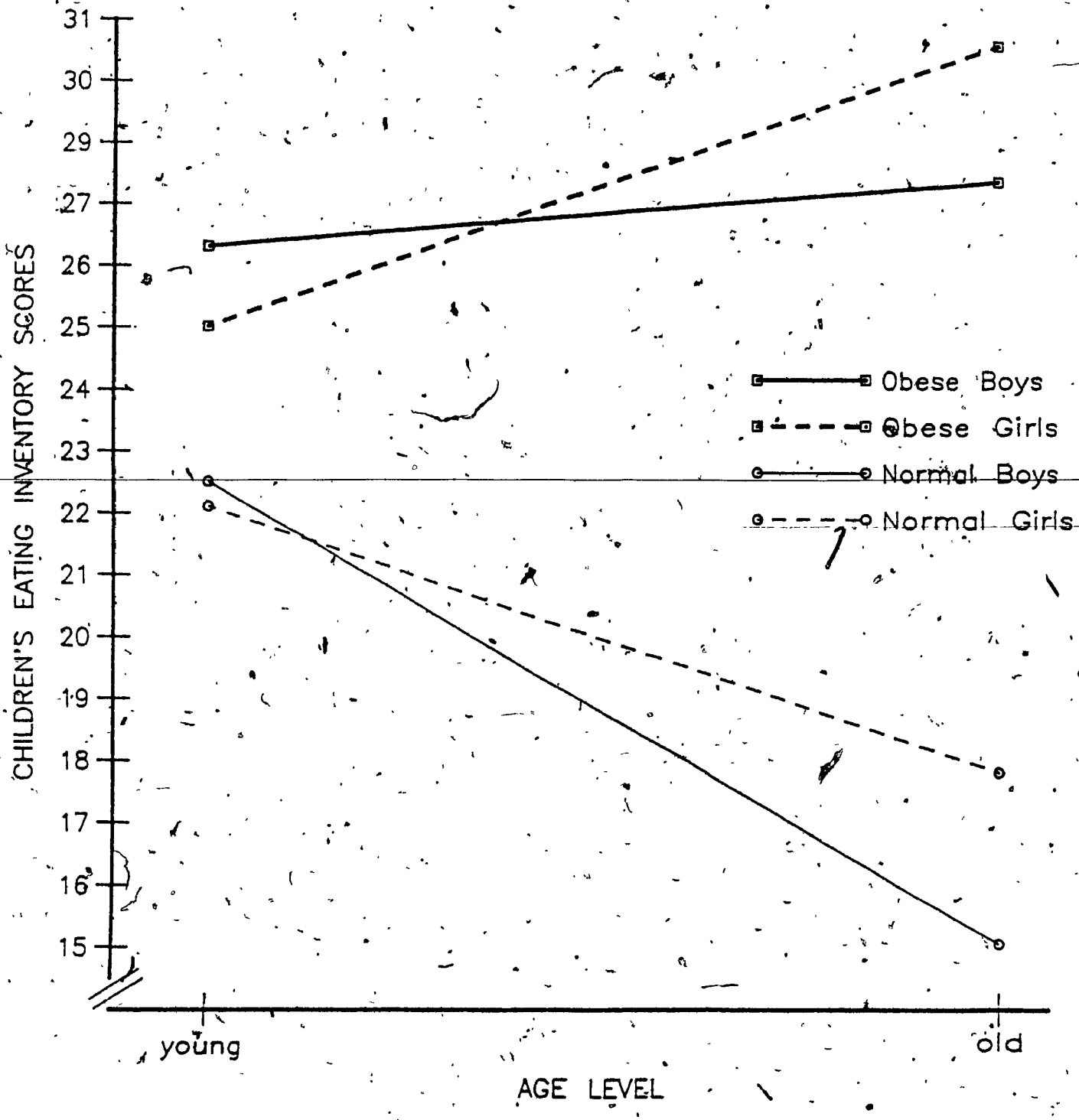
Table 15

Analysis of Variance Children's Eating Inventory: Obese and Normal Weight Sample

Source	SS	df	ms	F	Prob.
Age	158.64	1	158.64	4.08	.046
Sex	329.89	1	329.89	8.49	.004
Weight	1312.49	1	1312.49	33.77	.000
Interaction Age X Sex	230.67	1	230.67	5.93	.016
Interaction Age X Weight	420.08	1	420.08	10.81	.001
Interaction Sex X Weight	.41	1	.41	.01	.92
Interaction Age X Sex X Weight	1.95	1	1.95	.05	.82
Error Within	3265.08	84	38.87		
Constant	45234.8	1	45234.8	1163.34	0.0

FIGURE 6.

Developmental Course of Restrained Eating in Obese and Normals



indicated that young, normal-weight subjects scored significantly higher than old, normal-weight subjects, $F(1,84)=15.6$, $p=.000$. Old, obese subjects scored significantly higher than old, normal-weight subjects, $F(1,84)=53.88$, $p=.000$. Results of the tests for simple effects are presented in Appendix XIX.

In terms of the development of restraint, then while there appears to have been a general tendency for young subjects to score higher on the CEI relative to old subjects, this finding was pronounced and significant for normal-weight subjects only. There were no significant differences in restraint as a function of age for obese subjects. Similarly, while there appears to have been a general tendency for obese subjects towards greater restraint, these differences were pronounced and significant only for old subjects.

At the young age level, then, none of the groups, i.e. obese and normal-weight boys and girls, were significantly differentiated. Only at the older age level did significant differences emerge. Furthermore, the appearance of these differences was attributable to a relative drop in the CEI scores of normal-weight subjects. As noted previously, the scores of obese subjects remained relatively stable across age.

At both age levels, obese youngsters were more restrained than their normal-weight counterparts, although only significantly so at the older age level. Also, obese girls scored higher, although not significantly so, than obese boys and both normal-weight groups. The findings for the normal-weight sample, i.e. a drop in restraint for boys and stable scores across age for girls, resembled those obtained in the study of the developmental course of restrained eating.

Children's Eating Inventory: subscale analysis.

A second objective of the present section was to, once again, examine the development of individual subscales of restrained eating, i.e Cognitive Restraint, Disinhibition and Hunger, in a sample of youngsters identified as obese or normal-weight. Mean and standard deviation subscale scores for the 87 subjects are presented in Table 16. Again the slight discrepancy in the number of subjects is due to the manner in which missing data were handled. Subscale intercorrelations based on these data are provided in Table 17. Given the presence of significant subscale intercorrelations, a three-way (2X2X2) multivariate analysis of variance was performed on these data in order to determine the effects of sex, age and weight on each of the three subscales. Results of this analysis are presented in Table 18 and depicted graphically in Figures 7, 8 and 9.

Five significant multivariate effects were obtained, including two interaction and three main effects, using Wilks test of significance (Tabachnick & Fidell, 1983). Significant interactions include Age by Weight, $F(3,74)=2.93$, $p=.04$ and Age by Sex, $F(3,74)=3.34$, $p=.02$. Significant main effects were obtained for Weight, $F(3,74)=17.61$, $p=.000$, Sex, $F(3,74)=12.34$, $p=.000$ and Age, $F(3,74)=6.88$, $p=.000$.

In order to determine the source of significance of the multivariate effects, univariate effects of significance were examined.

On the Cognitive Restraint subscale, a significant univariate main effect for Weight was obtained, $F(1, 76)=45.82$, $p=.000$, with obese subjects scoring significantly higher than normal weight subjects,

Table 16

Subscale Mean and Standard Deviation Children's Eating Inventory Obese and Normal Weight Sample

Group	n[a]	Restraint M	Restraint SD	Disinhibition M	Disinhibition SD	Hunger M	Hunger SD
Obese							
Young							
Boys	6	11.3	4.1	5.7	4.1	7.2	4.2
Girls	11	13.5	3.3	4.2	3.1	4.9	4.3
Old							
Boys	6	11.3	5.2	7.2	3.5	6.8	2.9
Girls	11	13.8	3.5	7.4	2.1	4.8	2.8
Normal							
Young							
Boys	13	7.6	3.5	5.8	3.2	9.0	3.2
Girls	11	9.5	4.3	4.3	2.5	7.1	1.9
Old							
Boys	18	3.1	2.3	3.8	2.4	7.4	2.6
Girls	8	7.6	3.8	5.3	3.8	5.1	5.1

[a] $n = 84$

Table 17

Subscale Intercorrelations Children's Eating Inventory Obese and Normal Weight Sample

Subscale	Restraint	Disinhibition	Hunger
Restraint	---	.12 (86)[a]	-.39* (84)
Distribution		---	.50* (87)
Hunger			---

[a]Number in brackets indicates number of cases on which correlations are based.

* $p < .000$

Table 18

Manova Summary Table Children's Eating Inventory: Obese and Normal Weight Sample

Source	Multi F	Prob. Multi F	DV	Uni F	Prob. Uni F
Total	418.50	0.0	Restraint	531.48	0.0
			Disinhibition	255.39	0.0
			Hunger	336.18	0.0
Age	6.88	.000	Restraint	9.26	.003
			Disinhibition	.63	.43
			Hunger	1.57	.21
Sex	12.34	.000	Restraint	31.81	.000
			Disinhibition	.10	.76
			Hunger	10.21	.002
Weight	17.60	.000	Restraint	45.82	.000
			Disinhibition	4.25	.04
			Hunger	2.72	.10
Interaction Age X Sex	3.33	.02	Restraint	2.70	.10
			Disinhibition	5.87	.02
			Hunger	.03	.86
Interaction Age X Weight	2.93	.04	Restraint	3.72	.06
			Disinhibition	4.25	.04
			Hunger	1.15	.29
Interaction Sex X Weight	.17	.92	Restraint	.27	.60
			Disinhibition	.20	.65
			Hunger	.00	.95
Interaction Age X Sex X Weight	.32	.81	Restraint	.57	.45
			Disinhibition	.22	.64
			Hunger	.05	.83

Note: For multivariate F's, df = (3,74). For univariate F's, df = (1,76)

FIGURE 7

Developmental Course of Restrained Eating in Obese and Normals

Cognitive Restraint Subscale

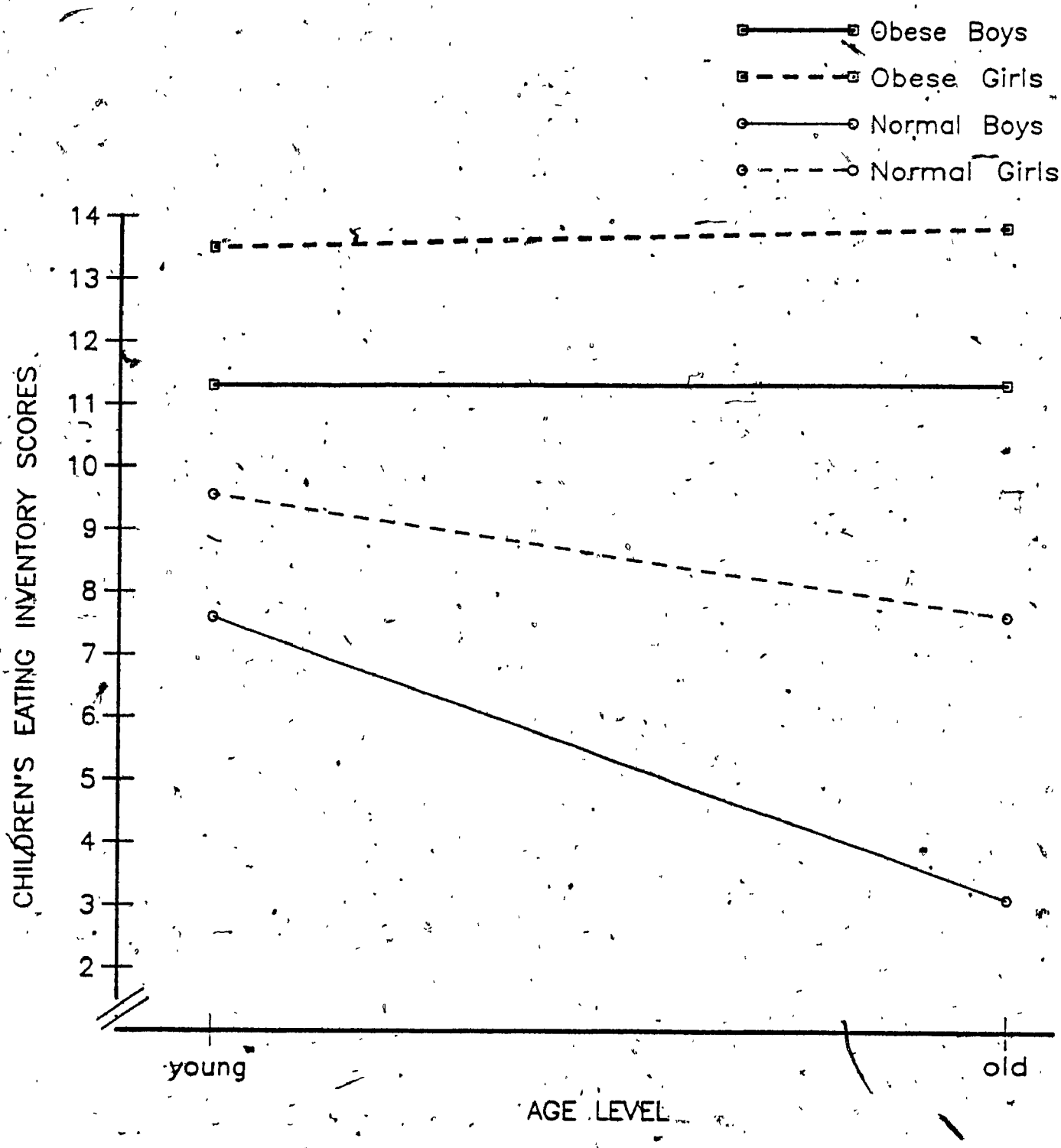


FIGURE 8

Developmental Course of Restrained Eating in Obese and Normals

Disinhibition Subscale

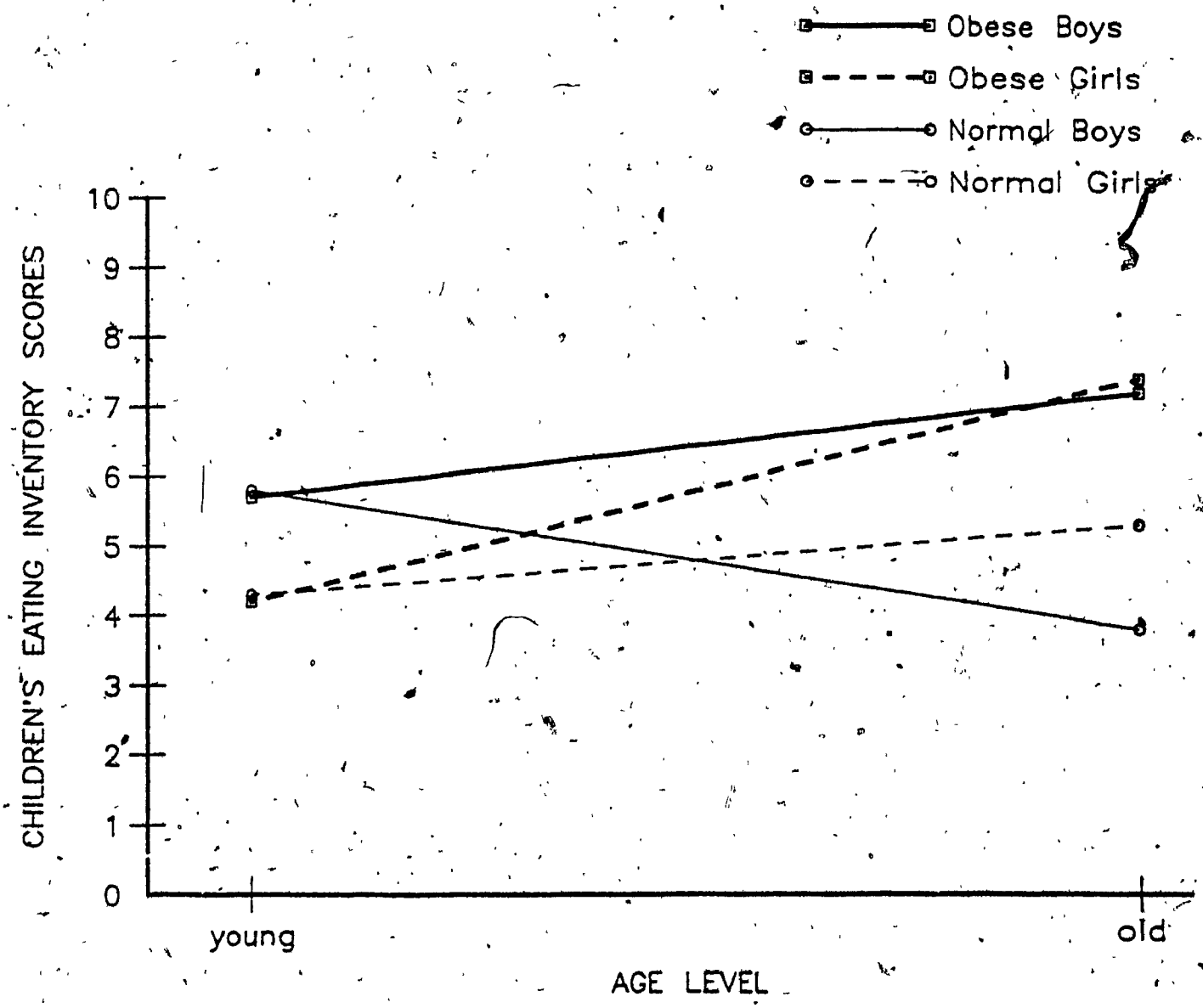
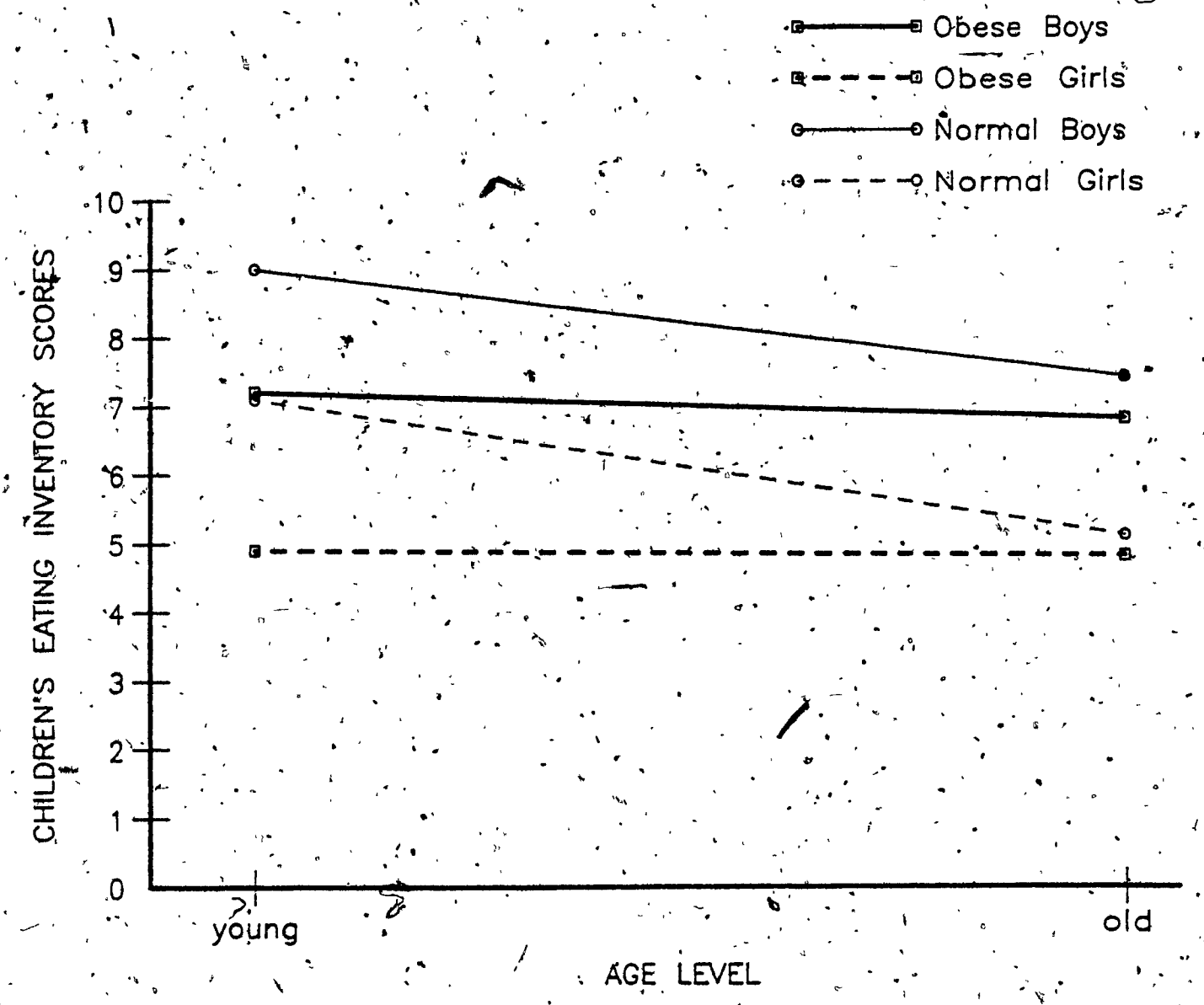


FIGURE 9

Developmental Course of Restrained Eating in Obese and Normals

Hunger Subscale



overall. There was also a significant univariate main effect for Sex, $F(1,76)=31.81$, $p=.000$, indicating that girls scored significantly higher on Cognitive Restraint than boys, and a significant univariate main effect for Age, $F(1,76)9.26$, $p=.003$, with young subjects scoring higher, overall, than old subjects.

On the Disinhibition subscale, there was a significant univariate main effect for weight $F(1,76)=4.25$, $p=.04$, with obese subjects scoring significantly higher than normal weight subjects. As well, both the Age by Sex and Age by Weight interactions are interpretable for Disinhibition. Examination of the means for the Age by Weight interaction indicates that Disinhibition is higher for older overweight subjects compared to the other three groups. Examination of the means for the Age by Sex interaction indicates that while boys' Disinhibition scores decreased with age, girls' Disinhibition scores increased. Figure 8 indicates that the decrease in boys' scores owes largely to the decrease in scores of normal weight boys, while the increase in girls' scores reflects increasing Disinhibition in overweight girls.

For the Hunger subscale, a significant univariate main effect was obtained for Sex, $F(1,76)=10.21$, $p=.002$, with boys scoring significantly higher, overall, than girls.

Socialization of Eating Patterns

Feeding Attitudes. In this section, data contributing to an understanding of the interrelationships between maternal feeding attitudes, restrained eating and obesity in children and adolescents are considered. The first prediction, based on developmental theory, was that a positive correlation would be obtained between children's age and

increasing permissiveness with regards to feeding attitudes, on the part of mothers. The Pearson Product Moment Correlation Coefficient for age and FAQ scores, based on the sample of subjects of unselected weight status was $r(119) = .30$, $p = .000$. This result supports the hypothesis that mothers become increasingly more permissive in their feeding attitudes as their children grow older. Furthermore, when data from the complete maternal sample was used, the hypothesis that mothers of girls would generally endorse more controlling feeding attitudes than mothers of boys was also supported, $t\ (134) = 9.92$, $p = .001$.

Next, on the basis of Woody and Costanzo's speculations, the relationship between maternal control and youngsters' percent overweight and between maternal control and child restraint were explored.

Pearson Product Moment Correlation Coefficients for FAQ scores and percent overweight, and FAQ scores and CEI scores are presented in Table 19. None of the correlations were statistically significant at the .01 level as required by the Bonferroni correction, although there was a trend toward significance for young and old girls, on the correlations between percent overweight and FAQ scores, and restrained eating and FAQ scores, respectively. For all groups, except young boys, there was an inverse relationship between both youngsters' percent overweight and restrained eating, and scores on the FAQ. For all other groups, i.e. young and old girls, and old boys, as percent overweight and restraint increased, so did degree of controlling feeding attitudes endorsed by mothers. For girls, the direction of the relationship was consistent across the two age levels, while for boys, it emerged only at the older age level.

Table 19.

Correlation FAQ with Percent Overweight and Restrained Eating: Developmental Sample with Maternal Data

Group	Percent Overweight			Restrained Eating		
	n	r[a]	Prob. r	n	r	Prob. r
Boys						
Old	27	-.23	.13	33	-.21	.13
Young	29	.06	.38	30	.20	.15
Girls						
Old	25	-.26	.11	29	-.33	.04
Young	22	-.33	.07	27	-.02	.46

[a] r Pearson Product Moment Correlation Coefficient

Finally, means and standard deviations of FAQ scores for the 54 young and old, obese and normal weight boys and girls for whom maternal data were available are presented in Table 20. A three-way analysis of variance (2X2X2) was performed on these data in order to investigate more directly, the effects of sex, age and weight on maternal feeding attitudes. Results of this analysis are presented in Table 21. Two significant effects, i.e. one main and one interaction effect were obtained. The main effect for weight, $F(1,45) = 6.4$, $p = .015$ indicated that overall, mothers of obese subjects endorsed more controlling feeding attitudes than mothers of normal weight subjects. This main effect was moderated, however, by a significant three-way interaction effect, $F(1,45) = 4.3$, $p = .043$, indicating that maternal feeding attitudes vary as a function of a complex interaction of youngsters' sex, age and weight. It was deemed inappropriate, given the small sample size involved in this analysis to attempt further formal analysis of the interaction effect. However, examination of the means in Table 20 suggests that while mothers of obese girls are more controlling than mothers of normal weight girls at the young age level, these differences fade at the older level, as mothers of obese girls relinquish some control. Second, while the FAQ scores of mothers of obese boys appear to remain stable across age, those of mothers of normal weight boys increase, indicating greater permissiveness.

Modeling Effects: Restrained Eating. In this section, two aspects of modeling of restrained eating are investigated. First, on the basis of general modeling theory (Bandura, 1977) suggesting that similarity between a model and observer enhances modeling, it was predicted that the

Table 20

Mean and Standard Deviation Feeding Attitudes Questionnaire Scores: Obese and Normal Weight Maternal Sample

Group	n[a]	M	SD
Obese			
Young			
Boys	5	88.20	10.11
Girls	7	80.14	10.57
Old			
Boys	4	88.25	13.02
Girls	10	91.20	8.66
Normal			
Young			
Boys	8	92.14	17.72
Girls	6	99.83	12.21
Old			
Boys	7	100.29	7.52
Girls	6	91.0	12.63

[a] $n = 53$ 1 case rejected due to missing data.

Table 21

Analysis of Variance Feeding Attitude Questionnaire Scores: Maternal Sample

Source	SS	df	ms	F	Prob.
Age	131.51	1	131.51	.93	.339
Sex	124.04	1	124.04	.88	.353
Weight	901.80	1	901.81	6.40	.015
Interaction Age X Sex	20.26	1	20.26	.14	.706
Interaction Age X Weight	165.74	1	165.74	1.18	.284
Interaction Sex X Weight	12.81	1	12.81	.09	.76
Interaction Age X Sex X Weight	605.90	1	605.90	4.30	.043
Error Within	6343.14	45	140.96		
Constant	444003.79	1	444003.79	3149.88	0.0

correlation of restraint scores between mother/daughter pairs would exceed that for mother/son pairs. Furthermore, greater modeling of maternal restraint by girls, relative to boys was expected for both obese and normal-weight samples, as well as for subjects of unselected weight status.

Second, it was expected that the correlation between restraint scores for mother daughter pairs would be greater for older than for younger girls.

In order to test the first prediction regarding the differential modeling of maternal restraint as a function of the sex of the child or adolescent, regardless of weight status, Pearson Product Moment Correlation Coefficients were computed for mothers' EI scores and their youngsters' CEI scores, for all mother/youngster pairs for whom maternal data was available, from the sample of unselected weight status. The correlations for the various subgroups of interest are presented in Table 22. When all subjects were considered, the experimental hypothesis was confirmed, i.e. the correlation of restraint between mother/daughter pairs was positive and significant, $r(55)=.47$, $p=.000$, while that between mother/son pairs was nonsignificant, $r(62)=.-.06$, $p=.35$. Secondly, as predicted, inspection of subgroup correlations indicated that it was only old girls who significantly resembled their mothers in terms of restraint orientation, $r(28)=.67$, $p=.000$. The correlation of restraint between mothers and their young daughters was nonsignificant, $r(27)=.23$, $p=.12$.

In order to examine modeling effects in obese and normal-weight boys and girls, it was necessary to collapse groups across age due to the small size of the samples under investigation. A non-parametric measure

Table 22

Correlations Children's Eating Inventory and Eating Inventory and Eating Inventory: Developmental Sample with Maternal Data

Group	n	r[a]	Prob. r
Total	117	.23	.007
Boys	62	-.06	.348
Girls	55	.47	.000
Young Boys	29	.05	.397
Old Boys	33	-.03	.429
Young Girls	27	.23	.124
Old Girls	28	.67	.000

[a] r Pearson Product Moment Correlation Coefficient

of association was used. Correlations were based on 54 subjects for whom maternal data was available, from the sample of 92 subjects previously identified as obese or normal-weight. Spearman Correlation Coefficients for EI and CEI scores of obese and normal weight samples are presented in Table 23. As expected, significant modeling effects were obtained for obese girls while the correlation for normal weight girls approached significance. The CEI scores of obese boys were unrelated to the EI scores of their mothers. For normal weight boys, however, a trend was observed for CEI scores to be inversely related to the EI scores of their mothers.

Table 23

Correlations Children's Eating Inventory and Eating Inventory: Obese and Normal Weight Sample

Group	n	r[a]	Prob. r
Boys			
Obese	9	.04	.457
Normal	15	-.41	.066
Girls			
Obese	18	.57	.007
Normal	12	.61	.017

[a] r Spearman Correlation Coefficent

Discussion

The results of the present research reveal the modified Children's Eating Inventory to be a reliable measure of the degree to which children and adolescents aged 8 to 17 years endorse a restrained eating orientation. The three subscales of the modified Three-Factor Eating Inventory provide data which is valuable in refining our conceptualization of the development of restraint. By age 8, many children are reporting a desire to control body weight by the restriction of food intake. Furthermore, as predicted, different age-related patterns in restraint are observed as a function of sex and obesity. Finally, neither the CEI nor the EI appears to be significantly influenced by social desirability bias.

The reliability of a measure of controlling versus permissive maternal feeding attitudes was also confirmed in the present research. As well, the utility of this measure in testing various hypotheses regarding maternal feeding attitudes in relation to sex, age and percent overweight in children and adolescents was demonstrated.

Developmental Aspects of Restrained Eating

The first study attempted to replicate Davis et al's (1981) investigation of age-related patterns in restrained eating as a function of sex, using total CEI scores instead of the Children's Restraint Scale. With respect to sex effects, girls were more restrained than boys in the later grades, i.e. grades 4 to 11. The expectation that total restraint scores of girls would increase significantly with age was not confirmed. Rather, the restraint scores of girls remained stable from earlier to

later grades. Also, contrary to the prediction that boys' restraint scores would show no age trends, boys' scores decreased significantly from earlier to later grades.

Additional correlational analyses were undertaken to further examine the relationship between percent overweight and restraint in a sample of children and adolescents of unselected weight status. Two alternative patterns of correlations had been predicted based on the empirical findings of Davis et al (1981) and Woody and Costanzo's (1981) preliminary findings and speculations regarding differential parental socialization attitudes and practices towards their obese girls and boys. The present results supported Davis et al's work in that positive correlations between percent overweight and restraint were obtained for both sexes at all grade levels. The correlations were significant for all groups except young girls, for whom a correlation approaching significance was obtained.

Predictions about the pattern of correlation between restraint and percent overweight based on Woody and Costanzo's (1981) speculations were not supported in either the present replication study or in Davis et al's (1981) study. One possible explanation is that the applicability of Woody and Costanzo's parental constraint model may be restricted to that population of children and adolescents who are already obese or "obesity-prone". In the replication study, only 14 subjects (6 percent) were actually obese. Davis et al did not specify the percentage of obese subjects in their study, although one might reasonably expect on the basis of epidemiological studies described previously, about 10 percent of children and adolescents of unselected weight status to be obese.

Besides differences in the number of actually obese subjects, sampling discrepancies might also account, to some extent, for differences between developmental trends observed in the Davis et al versus the replication study. As noted, Jewish subjects were overrepresented in the replication study. The influence of social factors such as socioeconomic status, ethnicity and recency of immigration have been shown to interact in influencing percent overweight in people of various ethnic and racial origins. Furthermore, these factors may be further moderated by sex (Stunkard, 1986). Aside from impacting directly on percent overweight, it is not unlikely that these factors may likewise interact in influencing attitudes towards obesity and developmental trends in restrained eating. The nature and extent of the influence of social factors on the restraint scores of the present sample unfortunately cannot be precisely specified.

While the influence of situational social factors such as the presence or absence of others on restrained eating has been demonstrated, the impact of the broader contextual social variables, such as demographic and cultural influences, on the developmental course of restrained eating remains unexplored. Hess (1981) notes that issues of sampling are especially pertinent in normative studies of family roles or of families from social or cultural categories. Generalization of findings must therefore be cautious.

Understanding the developmental trends in the present study, i.e. girls being equally restrained at all grade levels with boys decreasing in restraint with age poses an interpretive challenge. First, it is difficult to imagine why younger girls would be equally as restrained as

their adolescent counterparts. The unexpected drop in boys' restraint scores with increasing age also defies explanation. Adolescence is typically a period of heightened self-scrutiny and preoccupation with changes in body shape and size. Greater concern about overweight would be expected to be reflected in higher restraint scores in adolescence, regardless of actual degree of overweight. To date, Davis et al (1981) are the first to address restraint in younger children. Most studies have included only adolescent and adult subjects. As such it is difficult to ascertain whether differences between Davis's et al's findings and those of the replication study are due to methodological or sampling discrepancies such as those described previously, or to other more conceptually significant factors. One possible explanation is that restraint scores of younger subjects represent maternal impositions as well as self-imposed restrictions. As well, higher restraint in adolescent girls may be related to modeling maternal restraint. This explanation will be explored in the discussion of the socialization of eating patterns. However, first, an analysis of the CEI subscale findings for subjects of unselected weight status will be discussed.

For the Cognitive Restraint subscale, it was predicted, on the basis of Davis et al's (1981) study, that adolescent girls would score higher on Cognitive Restraint compared to their male counterparts. This prediction was supported by the data. The developmental course of Cognitive Restraint paralleled that of total restraint scores, i.e girls' Cognitive Restraint scores remained stable while boys' scores dropped with increased age.

No specific predictions were made regarding the developmental course

of Disinhibition or Perceived Hunger in subjects of unselected weight status. The Disinhibition scores of girls of unselected weight status increased with age while those of their male counterparts remained stable. Boys scored significantly higher than girls on Hunger at both age levels.

Analyses of the three subscales indicates that it is Cognitive Restraint and Disinhibition which account for the developmental differences obtained in total restraint. Boys apparently become less likely to self-impose eating restriction and less likely to eat in reaction to emotional or social cues. Girls, in contrast, report an increased reliance on emotional and social cues for eating and restraint. Further, they report greater self-imposed cognitive restriction of intake. Regarding the sex differences on the Hunger subscale, there are two alternative explanations. One is that girls and boys do not differ in their actual subjective experience of hunger, but that in our culture it is more socially acceptable for males to admit to having hearty appetites, while eating restriction is expected of girls. A current television commercial extols the virtues of "Man-size" chunky soup made for a hungry man and giant lumberjacks are observed feasting on "two scoops of raisins in a pack of Kellog's raisin bran". In contrast, tiny hipped T.V. lasses in skintight aerobic gear sip artificially sweetened soft drinks.

Another possibility is that chronic cognitive efforts to restrain may eventually undermine an individual's ability to recognize hunger and satiety signals. Polivy and Herman (1983) note that the first step in "natural eating" or "undieting", i.e. undoing the cognitive or

psychological patterns that dieting established, is to become reacquainted with bodily sensations signalling hunger and satiety. However, girls seem to be more restrained than boys only in later grades, while the difference in reported hunger is evident by the early grades. In their discussion of sex differences in the eating disorders, specifically anorexia nervosa, Brownell and Foreyt (1986) speculate about the likelihood that there are complex physiological differences in the way males and females respond to chronic energy restriction. They suggest the possibility that males have a stronger counter-response to deprivation than do females, so that hunger, satiety, metabolism or other factors exert stronger pressures for weight restoration. The extent to which cultural and physiological factors contribute, both independently and in interaction, to sex differences in the perception of hunger, is clearly a topic warranting further investigation.

Restrained Eating: Obese-Normal Comparisons

Comparison of the total restraint scores of obese and normal weight children and adolescents indicated that at the young age level none of the groups, i.e obese or normal weight boys and girls, were significantly differentiated. Significant differences did emerge, however, at the older, adolescent age level. Obese adolescents were more restrained than normal weight adolescents. Developmentally, the scores of obese subjects were stable across age, while those of normal weight subjects decreased with age. Total restraint scores of obese boys and girls did not differ at either age level. Likewise, within each age level, normal weight boys and girls did not differ significantly with respect to restraint. It is important to consider, however, that these results are based on a small

sample, especially for obese subjects. As well, at least some of the obese were participants in a weight control program. Since girls outnumber boys in seeking treatment, the obese boys may have been a highly selected group and not representative of obese boys in general. In future studies, it would be informative to directly compare a larger number of male and female obese adolescents and to study those in treatment separately from those who are not motivated to participate in a formal weight control program.

Brownell and Foreyt (1986) have addressed the issue of sex differences in obesity. They note that in addition to differential cultural influences on obese males and females, there could be differences in metabolism, fat cell development, body fat distribution, macronutrient preferences or other factors that create different types of obesity for men and women. They add that these types may differ as well in their psychological manifestations.

As far as the present results are concerned, though, it appears that once an identifiable condition of obesity is present, sex assumes a position of secondary importance in the determination of the development of restrained eating, i.e. obesity seems to override sex as the preeminent predictor of the extent and developmental course of restraint in children and adolescents. With respect to their restraint orientation, adolescent boys and girls who are obese resemble each other more closely than they resemble normal weight adolescents of the same sex.

No specific hypotheses were formulated regarding obese-normal weight differences on Cognitive Restraint. Results indicated that obese

subjects did score higher on this scale than normal weight subjects. The scores of all subjects decreased with age. However this pattern appeared to be more pronounced for normal weight than for obese subjects. Finally, obese girls had the highest Cognitive Restraint scores of all groups, although not significantly so. Again, obese-normal differences appear to override the sex differences observable when subjects are unselected as to weight status.

Tentative predictions regarding the proposed heightened salience of Disinhibition for obese girls were partially supported in that adolescent obese girls scored highest of all groups on this subscale, although not significantly so. Comparisons of obese-normal groups on this subscale revealed no significant differences at the younger age level. However, obese adolescents scored higher than normal weight adolescents on Disinhibition. This finding replicated that of Bjorvell et al (1985) with adults. Unfortunately, sex differences were not analyzed in that study. In the present study, all groups except normal weight boys tended to increase their Disinhibition scores with age. Recall that Woody and Costanzo (1981), in their study designed to test the psychosomatic hypothesis of obesity, found no indication of a differential reaction to mood on the part of obese children, as compared to their normal weight counterparts. However, the subjects in that study were 7 to 13 years old, approximately the same age range as the young subjects in the present sample. Findings in the adult literature, however, support the notion of an obese hypersensitivity to negative emotions, as noted previously (Streigel-Moore & Rodin, 1986). The obese adolescents in the present study, who did score higher on the Disinhibition subscale of the

CEI than their normal weight counterparts, appear to more closely resemble adults, with respect to emotional reactivity, than they do younger children. This developmental observation lends support to the notion proposed by Woody and Costanzo (1981) that it is obesity, or obesity-proneness, which precedes and possibly causes those personality and behavioral traits commonly associated with adult obesity, rather than the reverse.

On the Hunger subscale, the main effect for sex was replicated in the obese-normal sample. Interestingly, obese girls had the lowest, and normal weight boys the highest scores on the Hunger subscale. This was the only area in which sex was the determining variable and was not moderated by obesity. As previously suggested, strong social expectations seem to support hunger as a male motivation for eating.

Socialization of Eating Patterns

Two aspects of the socialization of eating patterns, i.e. maternal feeding attitudes and maternal modeling of restraint, were investigated with respect to sex, age and obesity in children and adolescents. As expected, in general, mothers of girls endorsed more controlling feeding attitudes compared to boys' mothers. Also according to expectation, overall, mothers indicated more permissive feeding attitudes as their youngsters grew older.

When the relationship between percent overweight and restraint with FAQ scores were examined, some interesting trends emerged. For young girls, as percent overweight increased, so did controlling attitudes on the part of mothers. Increased maternal control was associated with greater restraint on the part of old girls. For all groups, except young

boys, percent overweight and restraint were associated with greater maternal control. As predicted on the basis of Woody and Costanzo's (1981) speculations, the direction of the relationship was consistent across both age levels for girls, while for boys, the anticipated positive relationship emerged only at the older age level. These results were not as pronounced nor significant as would be expected. A more valid test of Woody and Costanzo's hypotheses would have involved a longitudinal investigation using the same subjects first as children and later as adolescents. Due to the methodological complexities associated with such a design, it was necessary instead to use a cross-sectional correlational method of sampling in the present study. Secondly, as previously discussed, Woody and Costanzo's speculations are more relevant to already obese or obesity prone youngsters, of which percent overweight alone is an insufficient indicator.

When the feeding attitudes of mothers of obese and normal youngsters were compared as a function of age and sex, it was found that overall, mothers of obese children endorse more controlling attitudes than mothers of normal weight children. Consistent with Woody and Costanzo's speculations, a complex interaction among the variables of age, sex and obesity was obtained. Further studies are needed given the small sample size; however, preliminary inspection of the means suggests mothers of obese girls to be more controlling at the young age level than mothers of normal weight girls. However, these differences fade as the girls enter adolescence, and in general, maternal control lessens. Mothers of obese boys, however, appear to exert a stable influence across age.

With respect to modeling of restraint, the major hypotheses were

supported. As predicted, the overall correlation of restraint scores for mother/daughter pairs exceeded that for mother/son pairs. Second, the correlation of restraint between mothers and daughters was significant only for the old girls. These findings support the predictions based on general modeling theory. Firstly, the similarity, in this case in sex, between a model and an observer enhances modeling. Second, there is an increasing resemblance in children's social behavior to adult models with age. When correlations for obese and normal weight youngsters were examined separately, some interesting findings emerged. For obese girls, the correlation between mother/daughter restraint scores was highly significant while that for normal weight girls approached significance. The correlation between mother/son restraint scores was nonsignificant for obese boys. For normal weight boys an inverse but nonsignificant relationship was obtained. It would be interesting to investigate the correlations between restraint scores of father/daughter and father/son pairs. One could speculate either that the hypotheses would be supported, in that like-sexed pairs, in this case father/sons would be more highly correlated than opposite-sexed pairs, i.e. father/daughters. Alternatively, restraint, and therefore modeling of restraint, may simply not be as salient an issue for males, or perhaps only for already obese males.

One of the more interesting findings in the present study was that the restraint scores of obese and normal weight boys and girls did not differ significantly at the younger ages. Only when subjects were in grade 8 or above or greater than 13 years old did pronounced and significant differences in total restraint scores emerge. In contrast,

evidence from correlational analysis and factorial design indicated that differences in maternal feeding attitudes towards specific subgroups were observed at the young age level. To understand the developmental course of restraint it is necessary to examine more fully the sequential processes of which it is comprised.

Recall that restraint is conceptualized as an individual's effort at deliberate, self-imposed, voluntary restriction of eating in the service of achieving and maintaining an acceptable body weight. The actual implementation of restrictions represents a final step in a sequence or chain of perceptual, cognitive and behavioral steps. The order of these steps may fluctuate to some extent and some steps may occur simultaneously. The first cognitive step is simply an awareness of one's body weight or shape and an evaluation or judgement of it's relative fatness. The next step involves a determination that the condition of one's body is undesirable, or at risk for becoming so. Next comes an appreciation that one's fatness or overweight is, within limits, an alterable characteristic, unlike height or eye-colour. The next step involves accessing information regarding weight reduction through manipulation of diet. This information needn't be accurate. The final step in the chain is the actual application of this information in altering eating behavior.

As noted previously, numerous studies have indicated that negative feelings about fatness are evident as early as the preschool years. At precisely which age children are able to accurately identify their own body type is less clear. LeBow (1984) cites a pertinent study described by Wooly, Wooly & Dyrenforth. In that study, obese preschoolers

preferred a thin to a fat rag doll, as did their normal weight peers, even though 60% of the obese children identified more in appearance with the fat doll. This finding suggests that 40% of these obese preschoolers did not identify with the fat doll. The mechanisms underlying the development of an accurate perception of body type, and it's normal time frame, remain vague. There are adults who seemingly steadfastly deny their overweight, squeezing themselves into clothes many sizes too small. Conversely, the anorexic "hides" her fat in billowy clothing.

Once the child has self-labelled him or herself overweight, and has deemed this an undesirable state of affairs, in order for restraint to occur there needs to be present as well, an appreciation of the alterability of weight. Again the time frame for the appearance of such an insight may vary widely amongst individuals. Some obese persons seem passively resigned to their "destiny" as forever obese, despite the weight loss propaganda which permeates the popular media. Many normal weight individuals are dismayed by rapid and substantial weight changes following a lifestyle or environmental change, such as going away to college or summer camp (Rodin & Slochower,1976) suggesting a naivete, on their part, regarding their personal susceptibility to weight change. For some, getting fat, like dying, may be regarded as something that happens only to others. Access to knowledge regarding the manipulation of diet provides the tools necessary for weight control. The question remains, at what age do children typically connect energy input and output to weight gain and loss. In a pertinent study, Wellman and Johnson (1982) investigated children's developing conceptions of how the body functions nutritionally by having kindergartners, third and sixth

graders complete two tasks. One task required the children to judge the cause of certain end states, for example why Jimmy is fat (tall, peppy, strong) while Johnny is skinny (short, lazy, weak). A second task required the children to judge the result of certain contrasting diets, eg. what happens to twin 1 who eats twice as much candy (vegetables, dessert, water etc.) as twin 2. Results indicated that while some fairly sophisticated conceptions were present even at the kindergarten level, there were other systematic misconceptions on the part of kindergartners that were overcome by the sixth grade. For example, younger children were more likely to think that changes in amount consumed, even of water, were directly and indiscriminately linked to changes in both height and weight. At every age the predominant response to an item concerning the fate of a twin who consumed twice as much dessert was that this twin would be sicker, weaker or lazier than the other twin. The conclusion that this twin would be fatter was not universally drawn by the children. Finally a significant developmental progression was observed with 33% of the kindergartners, 53% of third graders and 80% of sixth graders believed that a diet consisting solely of green beans would promote weight loss. The authors note that the most significant change from kindergarten to the sixth grade appeared in regard to how nutritional "inputs" relate to "outputs". They state "What distinguishes the understanding of older children is their ability to construct a more integrated model of how different nutritional factors interact with various other factors in the human physiological system. This involves specifically the development of knowledge about an invisible system, or inferred set of relationships which go beyond

surface of apparent similarities" (p.146).

The final sequence in the hypothesized chain leading to a restrained orientation, i.e. the application of self-imposed restrictions on eating, may simply not be relevant for younger children. As recalled, in the study by Eppright et al (1970) only half the preschoolers were permitted to determine the amount of food they ate while selection of specific foods was decided by mothers. In the present study, it was found that mother's became generally more permissive in their feeding attitudes as their children grew older. However, for young girls, maternal control increased as did percent overweight of the child. The distinction between self-imposed and external (maternal) imposed restrictions is obscured at the young age level, especially for girls. The stage may be set, indeed very early, for the appearance of a restrained orientation, with children aware of and displeased with their body weight, and knowledgeable to some degree about the mechanics of nutritional inputs and outputs. However, they may not yet be in a position to actively exercise control over their own inputs, ie. whether, when and how much they consume may still, to a large extent, be determined by their mothers. Woody and Costanzo (1981) state "One underlying implicit assumption of the externality/obesity formulation is that an individual's eating behavior is comprised of free-operant responses to environmental and internal stimuli. In the case of young children, however, access to and availability of food, as well as the timing and quantity of eating is largely determined by parents or socializers" (p.233).

A truly restrained orientation then is most likely initially manifested in adolescence when greater control over food selection and

amount consumed is assumed by the individual. Given the well-documented tendency for obesity to run in families, it seems reasonable to assume that overweight girls are more likely than normal weight girls to have mothers who are also overweight, and themselves more likely to model restraint. Normal weight boys, who model their mothers' restraint least and who are least susceptible to cultural pressures toward slimness, would then be expected to show decreased restraint with age and increased freedom of choice regarding food.

Although the present research has generated some interesting findings, much more work is needed. First, the validity of the CEI remains to be demonstrated. To date, no studies have examined the relationship between the restraint scores of children and adolescents and their actual eating behavior in either a laboratory or naturalistic setting. As with adults, it may be that different patterns of consumption are exhibited by restrained obese and normal weight subjects. Second, the CEI should be subjected to a formal factor analysis in order to assess the validity of the three subscales. Again, a different factor structure may emerge for obese and normal weight subjects.

Likewise, the relationship of scores on the FAQ to actual maternal feeding behaviors should be evaluated in order to validate this scale. The FAQ is a preliminary instrument requiring ongoing psychometric analysis especially geared towards refining its subscale structure. The goal of distinguishing significant parameters of the feeding transaction remains an important one. However reliable or valid this scale, it will prove difficult to conclusively establish a causal, directional relationship between specific maternal feeding attitudes and

developmental obesity. This difficulty reflects one of many methodological issues plaguing most research on family behavior. Hess (1981) in a discussion of the approaches to the measurement and interpretation of the parent-child interaction, states "the mutuality of influence among members (family) and the intercorrelations of variables used in many studies make it difficult to identify the direction of influence among members and to isolate the role of any particular variable" (p.207).

Despite these limitations, the FAQ could prove useful in assessing an important parental variable in treating obese youngsters. It may be a predictor of treatment success or maintenance, or could be used as a pre-post measure to gauge the effectiveness of parent training.

For example, Cohen, Gelfand, Dodd, Jensen, and Turner (1980) examined self-regulation versus parental control in the maintenance of weight loss in obese children. Results of their study indicated that those children who maintained weight loss post-treatment reported engaging in more self-regulation behaviors than those who eventually regained weight. In contrast, parental regulation of weight characterized those who regained weight. Unfortunately neither sex nor age differences were reported. In future studies of a similar nature, an instrument such as the FAQ could provide a short, reliable means to operationalize parental versus self-regulation.

The CEI might also have significant treatment applications. As noted previously, Bjorvell et al (1985) found in the one study of the EI using obese subjects, a significant relationship between scores on the Cognitive Restraint Factor and weight loss over time in treatment. The

use of subscale scores could also prove helpful in identifying children and adolescents at risk for becoming binge-eaters. A "binge", as opposed to merely overeating, may be defined as a period of uncontrolled eating in which a large amount of food is consumed in a short period of time (Gormally, 1984). To this definition must be added the subjective experience of losing control of eating and negative emotional reactions (such as guilt or self-hatred) consequent to the binge. Relapse prevention training (Marlatt & Gordon, 1985) or some adaptation thereof might be beneficial for such obese children scoring high on the Disinhibition subscale of the CEI. The training focuses on identifying the potential emotional and social cues triggering a relapse episode and constructing and rehearsing adaptive cognitive-behavioral response to those cues.

Given the preponderance of readily available high calorie foods in our culture, some degree of restraint or selectivity with regards to consumption would appear to be necessary to support good health and the maintenance of a reasonable body weight. The distinction between the perception of restraint as selectivity and moderation versus outright deprivation, may often be as much a subjective, as an actual phenomenon. The present author recalls being accused at age 11 of taking all the "diet food" when invited to help herself to the contents of a chubby friend's refrigerator. The author had innocently chosen preferred foods, never considering, for a moment, them to be "diet foods" nor giving a thought to weight control. Even when actual weight loss is desired, cognitive restraint may mean different things to different people. Herman and Polivy (1983) note that "for some, dieting involves eating

what one normally eats, but less of it. Others diet by eliminating or cutting down on certain kinds of food. Still others shift completely their eating patterns, eating only a limited variety of foods, sometimes in specific combinations, orders or time periods" (p.198).

It remains to determine the nature of a "healthy" restraint profile, where reasonable and moderate selectivity is not accompanied by an overwhelming sense of psychological or physiological deprivation, the tendency to overeat in response to non nutritive emotional or social stimuli, and where the subjective perception of hunger is consistent with bodily signals. Next, through an understanding of socialization processes such as feeding attitudes and modeling, perhaps we can assist our children, whatever their propensity for weight gain, to develop eating styles most conducive to the maintenance of good health and an acceptable appearance.

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APPENDIX I

Ethical Consent

CONCORDIA UNIVERSITY

APPENDIX I

INTERNAL MEMORANDU

TO Joyce Isbitsky

FROM Bill Brender, Department Human Research Ethics Committee

DATE March 31, 1982

Re: Maternal-child interaction and eating restraint in Obese and nonobese children

Thanks for sumitting your project. I see no ethical problems in it.

W. Brender

APPENDIX II

Cover Letter

CONCORDIA UNIVERSITY

APPENDIX II

Department of Psychology

Winter, 1983

Dear Parent:

This year, several Montreal area elementary and high schools will participate in a research study in collaboration with the Psychology Department at Concordia University. The project will be conducted by Joyce Isbitsky, M.A., a psychologist and doctoral candidate, under the supervision of Donna White, Ph.D., Associate Professor of Psychology and Education.

Ms. Isbitsky is investigating the development of dieting practices and obesity in children aged 8-16, in relation to maternal attitudes towards feeding, and maternal dieting practices. This doctoral research is sponsored jointly by Health and Welfare Canada and Le conseil québécois de la recherche sociale.

Children participating in the study will complete, in small groups at their school, two questionnaires on eating habits and response set. Each child will then be individually and privately weighed and measured. The group session and weigh-in will last 30 to 40 minutes. Scheduling will be arranged so as to least disrupt the children's routine. Preliminary studies indicate that children find the experience interesting and enjoyable.

Mothers of participating children will receive three questionnaires on eating habits, attitudes towards feeding, and response set. Completed questionnaires will be mailed directly to Ms. Isbitsky. A stamped, self-addressed envelope will be provided.

Complete confidentiality will be strictly observed. The study will focus on group responses by sex and grade level, rather than on the responses of individual children. Written consent (see attached) will be required for both child and adult participants, who are free to withdraw from the study at any time. This project has been fully approved by the University Ethics Committee.

At the completion of the study, a full report of the findings will be sent to the schools. A summary of the results will be forwarded to interested participants, on request. Consultation will be available to parents concerned about their children's eating or weight problems.

Please complete the attached Consent form and have you child return it to the school office as soon as possible. If you have any questions about the study, please contact Joyce Isbitsky at 879-8069 or 935-1427. Dr. White can be reached at 879-4285.

THANKS FOR YOUR COOPERATION !!!

SIR GEORGE WILLIAMS CAMPUS
1455 DE MAISONNEUVE BLVD. WEST
MONTREAL, QUEBEC H3G 1M8

APPENDIX III

Consent Form

APPENDIX III

CONSENT FORM

(PLEASE COMPLETE AND RETURN TO THE SCHOOL OFFICE AS SOON AS POSSIBLE)

I HAVE READ THE DESCRIPTION OF JOYCE ISBITSKY'S STUDY ON THE DEVELOPMENT OF DIETING AND OBESITY IN CHILDREN IN RELATION TO MATERNAL ATTITUDES TOWARDS FEEDING.

I do ___ do not ___ consent for _____ to participate
Child's name
in this study.

I would ___ would not ___ be willing to complete the questionnaires described.

_____ _____
Mother's Name (Please Print) Signature

_____
Date

Telephone: _____

Address: _____

_____ Postal Code: _____

Child's Age _____ Sex _____ Grade ___ School _____

APPENDIX IV

Second Cover Letter

CONCORDIA UNIVERSITY

APPENDIX IV

DEPARTMENT OF PSYCHOLOGY

Fall/Winter 1982

Dear Mother:

Thank you for choosing to participate in the Department of Psychology's research on the relationship between maternal and child eating habits. If he/she has not already done so, your child will be completing two questionnaires at school.

We are asking mothers to complete and return, at their earliest convenience, the enclosed booklet. This booklet contains three questionnaires: 1) Feeding Attitudes Questionnaire; 2) Personal Reaction Survey; and 3) Eating Inventory. Please check that you have responded to every item, as it is difficult to score questionnaires with missing data. Should none of the alternatives provided seem completely accurate, please select the one that is most appropriate. As always, complete confidentiality will be strictly observed.

A stamped, self-addressed envelope is provided for your convenience.

Results of the study will be provided, on request, as soon as they are available.

Should you have any further questions or comments about the study, don't hesitate to call me at 879-8069 or 935-1427.

Again, your time and effort in contributing to this research, and that of your child, are greatly appreciated!

Sincerely,

Joyce Isbitsky, M.A.
Applied Psychology Centre
GM-600

SIR GEORGE WILLIAMS CAMPUS
1455 DE MAISONNEUVE BLVD. WEST
MONTREAL, QUEBEC H3G 1M8

APPENDIX V

Information form

APPENDIX V

This booklet contains the following:

- FEEDING ATTITUDES QUESTIONNAIRE
- PERSONAL REACTION SURVEY
- EATING INVENTORY

Please remember that your responses will be handled in the strictest confidentiality.

_____ Telephone: _____

Your Name (Please print clearly)

Address: _____

_____

Height

_____

Weight

Do you consider yourself 1 underweight 2 normal weight 3 overweight 4 obese

_____

Child's Name

Sex M F _____

Age _____

Grade _____

School _____

Do you consider your child 1 underweight 2 normal weight 3 overweight 4 obese

Other Children:	Age	Sex				
_____	___	___	1	2	3	4
_____	___	___	1	2	3	4
_____	___	___	1	2	3	4

APPENDIX VI

Eating Inventory and Scoring instructions

APPENDIX VI

Directions for Scoring the Eating Inventory

Each item in Part I and Part II is scored "0" or "1". The "correct" answer for the true/false items is underlined and beside it is the number of the factor that it measures. Scoring of the items in Part II is determined by splitting the responses at the middle. If the item is labelled (+), those responses above the middle are given a zero, and vice-versa for those labelled (-).

For example, a score of 3 or 4 in Part II would be rescored as "1". A score of 1 or 2 would be rescored as "0".

APPENDIX VI

EATING INVENTORY

Directions: This booklet contains a number of statements. Each statement should be answered either TRUE or FALSE. Read each statement and decide how you feel about it in PART 1.

If you agree with the statement, or if you feel that it is TRUE about you, answer TRUE by circling the T next to the statement.

If you disagree with a statement, or if you feel that it is false as applied to you, answer FALSE by circling the F next to the statement.

PART I

			Factor #
1. When I smell a sizzling steak or see a juicy piece of meat, I find it very difficult to keep from eating even if I have just finished a meal.	T	F	2
2. I usually eat too much at social occasions like parties and picnics.	T	F	2
3. I am usually so hungry that I eat more than three times a day.	T	F	3
4. When I have eaten my quota of calories, I am usually good about not eating any more.	T	F	1
5. Dieting is hard for me because I just get too hungry.	T	F	3
6. I deliberately take small helpings as a means of controlling my weight.	T	F	1
7. Sometimes things just taste so good that I keep on eating even when I am no longer hungry.	T	F	2
8. Since I am often hungry, I sometimes wish that while I am eating an expert would tell me that I have had enough or that I can have something more to eat.	T	F	3

EATING INVENTORY (continued)

			Factor #
9. When I feel anxious, I find myself eating.	T	F	2
10. Life is too short to worry about dieting	T	F	1
11. Since my weight goes up and down, I have gone on reducing diets more than once.	T	F	2
12. I often feel so hungry that I just have to eat something.	T	F	3
13. When I am with someone who is overeating, I usually overeat too.	T	F	2
14. I have a pretty good idea of the number of calories in common foods.	T	F	1
15. Sometimes when I start eating I just can't seem to stop.	T	F	2
16. Since I know how guilty I will feel afterward, I rarely go on eating binges.	T	F	(unscored) 1
17. It is not difficult for me to leave something on my plate.	T	F	2
18. At certain times of the day I get hungry because I have gotten used to eating then.	T	F	3
19. Sometimes I get so nervous that I just have to eat something.	T	F	(unscored) 2
20. While on a diet, if I eat a food that is not allowed I consciously eat less for a period of time to make up for it.	T	F	1

EATING INVENTORY (continued)

			Factor #
21. Being with someone who is eating often makes me hungry enough to eat also.	T	F	3
22. When I feel blue, I often overeat.	T	F	2
23. I enjoy eating too much to spoil it by counting calories or watching my weight.	T	F	1
24. When I see a real delicacy, I often get so hungry that I have to eat it right away.	T	F	3
25. I often stop eating when I am not full as a conscious mean of limiting the amount that I eat.	T	F	1
26. I get so hungry that my stomach often seem like a bottomless pit.	T	F	3
27. My weight has hardly changed at all in the last ten years.	T	F	2
28. I am always hungry so it is hard for me to stop eating before I finish the food on my plate.	T	F	3
29. When I feel lonely, I console myself by eating.	T	F	2
30. I consciously hold back at meals in order not to gain weight.	T	F	1
31. I sometimes get very hungry late in the evening or at might.	T	F	3
32. I eat anything I want, any time I want.	T	F	1
33. Without even thinking about it, I take a long time to eat.	T	F	2

EATING INVENTORY (continued)

			Factor #
34. I count calories as a conscious means of controlling my weight.	T	F	1
35. I do not eat some foods because they make me fat.	T	F	1
36. I am always hungry enough to eat at any time.	T	F	3
37. I pay a great deal of attention to changes in my figure.	T	F	1
38. While on a diet, if I eat a food that is not allowed, I often then splurge and eat other high calorie foods.	T	F	2

PART II

Directions: Please answer the following questions by circling the number above the response that is appropriate for you.

39. How often are you dieting in a conscious effort to control your weight? (Factor # +1)

1	2	3	4
rarely	sometimes	usually	always

40. How may poundS over your desired weight were you at your maximum weight? (Factor # +2 (unscored))

1	2	3	4	5	6
zero lbs	less than 5 lbs	less than 10 lbs	less than 15 lbs	less than 20 lbs	less than 35 lbs

7	8	9	10
less than 50 lbs	less than 75 lbs	less than 150 lbs	greater than 150 lbs

EATING INVENTORY (continued)

Factor #.

41. Would a weight fluctuation of 5 lbs affect the way you live your life?

1	2	3	4	
not at all	slightly	moderately	very much	+1

---

42. How often do you feel hungry?

1	2	3	4	
only at meal times	sometimes between meals	often between meals	almost always	+3

---

43. WHat is you maximum weight loss within one month?

1	2	3	4	5	6	
less than 2 lbs	less than 4 lbs	less than 6 lbs	less than 8 lbs	less than 10 lbs	less than 12 lbs	+2 (unscored)

7	8	9	10
less than 15 lbs	less than 20 lbs	less than 30 lbs	greater than 30 lbs

---

44. Do feelings of guilt about overeating help you to control your food intake?

1	2	3	4	
never	rarely	often	always	+1

---

45. How difficult would it be for you to stop eating halfway through dinner and not eat for the next four hours?

1	2	3	4	
easy	slightly difficult	moderately difficult	very difficult	+3

---

46. How conscious are you of what you are eating?

1	2	3	4	
Not at all	slightly	moderately	extremely	+1

EATING INVENTORY (continued)

Factor #

47. How frequently do you skip a meal as a conscious means of limiting your eating?

1	2	3	4	
almost never	seldom	at least once a week	almost everyday	+1

---

48. What is your maximum weight gain within a week?

1	2	3	4	5	6
zero lbs	less than 1 lb	less than 2 lbs	less than 3 lbs	less than 4 lbs	less than 5 lbs

7	8	9	
less than 6 lbs	less than 9 lbs	greater than 9 lbs	+2

---

49. How frequently do you <u>avoid</u> "stoking up" on tempting foods?

1	2	3	4	
almost never	seldom	usually	almost always	+1

---

50. In a typical week, how much does your weight fluctuate (maximum-minimum)?

0	1	2	3	4	5	
zero lbs	less than 1 lb	less than 2 lbs	less than 3 lbs	less than 4 lbs	less than 5 lbs	

6	
greater than 5 lbs	+2 (unscored)

EATING INVENTORY (continued)

Factor #

51. How likely are you to shop for low calorie foods?

1	2	3	4	
unlikely	slightly likely	moderately likely	very likely	+1

---

52. Do you eat sensibly in front of others and splurge alone?

1	2	3	4	
never	rarely	often	always	+2

---

53. How likely are you to consciously eat slowly in order to cut down on how much you eat?

1	2	3	4	
unlikely	slightly likely	moderately likely	very likely	+1

---

54. How frequently do you skip dessert because you are no longer hungry?

1	2	3	4	
almost never	seldom	at least once a week	almost every day	-3

---

55. How likely are you to consciously eat less than you want?

1	2	3	4	
unlikely	slightly likely	moderately likely	very likely	+1

---

56. Do you go on eating binges even though you are not hungry?

1	2	3	4	
never	rarely	sometimes	at least once a week	+2

EATING INVENTORY (continued)

Factor #

57. On a scale from 0 to 10, where 0 means no restraint in eating (eat whatever you want, whenever you want it) and 10 means total restraint (constantly limiting food intake and never "giving in"), what number would you give yourself?

0
eat whatever you want, whenever you want it
1
2
usually eat whatever you want, whenever you want it
3
4
often eat whatever you want, whenever you want it
5
6
often limit food intake, but often "give in"
7
8
usually limit food intake, rarely "give in"
9
10
constantly limiting food intake, never "giving in" +1

---

58. To what extent does this statement describe your eating behavior?
"I start dieting in the morning, but because of any number of things that happen during the day, by evening I have given up and eat what I want, promising myself to start dieting again tomorrow.".

not like me | little like me | pretty good description of me | describes me perfectly +2

THANK YOU

APPENDIX VII

Pilot Study Restrained Eating / Adults

APPENDIX VII

Pilot Study Restrained Eating / Adults

A typed booklet containing the EI and Restraint Scale (Herman & Polivy, 1980) was completed by 35 adults of unselected weight. Recent evidence suggests that self-report appears to be an accurate method of weight assessment (Stunkard & Albaum, 1981) averaging three percent less than measured weights (Ruderman, 1983). The pilot sample included 17 females, of whom 5 were obese by their own report, and 12 normal weight. Of the 18 males, 7 were obese and 11 normal weight on the basis of self-report. Subjects ranged in age from 21 to 60 years, with a mean age of 38.6 years. The majority of subjects were secretarial staff, graduate students and faculty members in the Departments of Education and Psychology, at Concordia University. Subjects were approached individually and asked to complete a questionnaire on eating habits. They were instructed not to discuss their responses with others. The order of presentation of the two scales was counterbalanced so that approximately half the sample completed the Revised Restraint Scale first and half completed the EI first. For the EI, the median, mean and standard deviation were 15.8, 18.9 and 11.8, respectively. For the Restraint Scale, the median, mean and standard deviation were 12.3, 13.1 and 9.1, respectively. Given the departure from the normal distribution evident from an examination of the distribution of both scales, non-parametric statistics were applied to these data.

Spearman Correlation coefficients were calculated for the combined sample, as well as separately for obese females, normal weight females, obese males and normal weight males. It can be seen from Appendix VII-1

APPENDIX VII (Continued)

that the two measures of restrained eating were significantly correlated for all groups.

APPENDIX VII-1

Correlations: Eating Inventory and Restraint Scale

APPENDIX VII-1

Correlations: Eating Inventory and Restraint Scale

Group	n	r[a]	Prob. r
Females			
Normal	12	.79	.002
Obese	5	1.00	.001
Males			
Normal	11	.77	.003
Obese	7	.82	.012
Combined	35	.83	.001

[a]Spearman Correlation Coefficients

APPENDIX VIII

Childrens' Eating Inventory

APPENDIX VIII

MY EATING HABITS

MALE FEMALE AGE _____ GRADE_____

WE WOULD LIKE TO FIND OUT ABOUT YOUR EATING HABITS, THAT IS HOW YOU FEEL ABOUT EATING AND HOW MUCH WEIGHT YOU HAVE GAINED OR LOST. THERE ARE NO RIGHT OR WRONG ANSWERS BECAUSE PEOPLE ARE DIFFERENT IN WHAT THEY EAT AND HOW MUCH THEY EAT. PLEASE CIRCLE "TRUE" OR "FALSE" FOR EACH STATEMENT IN PART I.

PART I

Factor #

1. When I smell a sizzling steak or see a juicy piece of meat, I find it very hard not to eat, even if I have just finished a meal.

True False 2

---

2. I usually eat too much at parties and picnics.

True False 2

---

3. I am usually so hungry that I eat more than three times a day.

True False 3

---

4. When I have eaten my share of calories, I am usually good about not eating any more.

True False 3

---

5. Dieting is hard for me because I just get too hungry.

True False 3

---

6. I deliberately take small helpings to control my weight.

True False 1

MY EATING HABITS (continued)

			Factor #
7. Sometimes things just taste so good that I keep on eating even when I am no longer hungry.	True	False	2
8. Since I am often hungry, I often wish an expert would tell me that I have had enough or that I can have something more to eat.	True	False	3
9. When I feel nervous, I find myself eating.	True	False	2
10. Life is too short to worry about dieting.	True	False	1
11. Since my weight goes up and down, I have gone on diets more than once.	True	False	2
12. I often feel so hungry that I just have to eat something.	True	False	3
13. When I am with someone who is overeating, I usually overeat too.	True	False	2
14. I have a pretty good idea of the number of calories in common foods.	True	False	1

MY EATING HABITS (continued)

		Factor #
15. Sometimes when I start eating, I just can't seem to stop.	True False	2
16. Since I know how guilty I will feel afterwards, I rarely go on eating binges.	True False	1 (unscored)
17. It is not hard for me to leave something on my plate.	True False	2
18. At certain times of the day I get hungry because I have gotten used to eating then.	True False	3
19. Sometimes I get so nervous that I just have to eat something.	True False	2 (unscored)
20. While on a diet, if I eat a food that is not allowed, I eat less for a while afterward to make up for it.	True False	1
21. Being with someone who is eating often makes me hungry enough to eat also.	True False	3
22. When I feel sad, I often overeat.	True False	2

MY EATING HABITS (continued)

			Factor #
23. I enjoy eating too much to spoil it by counting calories or watching my weight.	True	False	1
24. When I see a real treat, I often get so hungry that I have to eat it right away.	True	False	3
25. I often stop eating when I am not full so that I won't eat so much.	True	False	1
26. I get so hungry that my stomach often feels like a bottomless pit.	True	False	3
27. I am always hungry so it is hard for me to stop eating before I finish the food on my plate.	True	False	3
28. When I feel lonely, I make myself feel better by eating.	True	False	2
29. I eat less at meals so I won't gain weight.	True	False	1
30. I sometimes get very hungry late in the evening or at night.	True	False	3

MY EATING HABITS (continued)

			Factor #
31.	I eat anything I want, anytime I want.		
	True	False	1
32.	Without even thinking about it, I take a long time to eat.		
	True	False	2
33.	I count calories to control my weight.		
	True	False	1
34.	I do not eat some foods because they make me fat.		
	True	False	1
35.	I am always hungry enough to eat at any time.		
	True	False	3
36.	I pay a great deal of attention to changes in my size.		
	True	False	1
37.	While I'm on a diet, if I eat a food that is not allowed, I often then splurge and eat other fattening foods.		
	True	False	2

MY EATING HABITS (continued)

PART II

ANSWER THE FOLLOWING QUESTIONS BY CIRCLING THE ANSWER THAT IS RIGHT FOR YOU.

Factor #

38. Do you feel bad about yourself after you eat too much?

Never Sometimes Often Always +1

---

39. How often are you dieting?

Never Sometimes Often Always +1

---

40. Do you eat the right amounts in front of others and eat too much when you are alone?

Never Sometimes Often Always +2

---

41. What is the most weight you have ever lost in one month?

0-4 pounds 5-9 pounds 10-14 pounds

15-19 pounds more than 20 pounds Do not know +2 (unscored)

---

42. What is the most weight you have gained in one week?

0-1 pounds 1-2 pounds 2-3 pounds

3-5 pounds more than 5 pounds Do not know +2

---

43. In an average week, how much does your weight change?

0-1 pounds 1-2 pounds 2-3 pounds

3-5 pounds more than 5 pounds Do not know +2 (unscored)

---

44. How much do you pay attention to what you are eating?

Not at all A little bit Pretty much Very much +1

MY EATING HABITS (continued)

Factor #

45. If you gained or lost 5 pounds, would it affect the way you live your life?

Not at all | A little bit | Pretty much | Very much | +1

---

46. Do you think of yourself as

Very underweight | A little underweight

About the right weight | A little overweight

Very overweight | +1

---

47. How often do you feel hungry?

Only at meal times | Sometimes between meals | Often between meals | Almost always | +1

---

48. How hard would it be for you to stop eating half-way through dinner and not eat for the next four hours?

Easy | Slightly hard | Moderately hard | Very hard | +3

---

49. How often do you skip a meal to make sure you don't eat so much?

Almost never | Seldom | At least once a week | Almost everyday | +1

---

50. Do you eat slowly so that you won't eat so much?

Almost never | Seldom | Sometimes | Often | +1

---

51. How often do you skip dessert because you are no longer hungry?

Almost never | Seldom | At least once a week | Almost everyday | -3

MY EATING HABITS (continued)

Factor #

52. How often do you eat less than you want?

Almost never | Seldom | Sometimes | Often — +1

---

53. Do you go on eating binges even though you are not hungry?

Never | Rarely | Sometimes | At least once a week — +2

---

54. Which describes you best? Circle the right number.

(1) I eat whatever I want, whenever I want

(2) I usually eat whatever I want, whenever I want

(3) I often eat whatever I want, whenever I want

(4) I often limit the amount I eat, but I often "give in"

(5) I usually limit the amount I eat, and rarely "give in"

(6) I always limit the amount I eat, and never "give in". +1

---

55. Is this a good description of you?

"I start dieting in the morning, but because of things that happen during the day, I give up and eat whatever I want. I promise myself that tomorrow I will start a new diet".

Not like me | A bit like me | A lot like me | Exactly like me — +2

APPENDIX IX

Pilot Study: Restrained Eating / Children

APPENDIX IX

Comparison of Children's Eating Inventory and Children's Restraint Scale means, Standard Deviations and Ranges

Sex	1st Administration[a]			Retest[b]		
Boys	M	SD	Range	M	SD	Range
CRS	11.6	3.26	6-17	11.0	4.27	5-18
CEI	20.6	5.28	11-32	17.5	4.93	10-25
Girls						
CRS	10.6	3.58	4-21	10.0	4.27	1-18
CEI	18.3	6.59	8-31	16.8	8.83	4-32

Note. CEI = Children's Eating Inventory.
CRS = Children's Restraint Scale
[a] $n = 38$ [b] $n = 33$

APPENDIX X

Personal Reaction Inventory

APPENDIX X

PERSONAL REACTION INVENTORY

Listed below are a number of statements concerning personal attitudes and traits. Read each item and decide whether the statement is true or false as it pertains to you personally.

Circle One

T	F	1.	Before voting I thoroughly investigate the qualifications of all the candidates.
T	F	2.	I never hesitate to go out of my way to help someone in trouble.
T	F	3.	It is sometimes hard for me to go on with my work if I am not encouraged.
T	F	4.	I have never intensely disliked anyone.
T	F	5.	On occasion I have had doubts about my ability to succeed in life.
T	F	6.	I sometimes feel resentful when I don't get my way.
T	F	7.	I am always careful about my manner of dress.
T	F	8.	My table manners at home are as good as when I eat out in a restaurant.
T	F	9.	If I could get into a movie without paying and be sure I was not seen I would probably do it.
T	F	10.	On a few occasions, I have given up doing something because I thought too little of my ability.
T	F	11.	I like to gossip at times.
T	F	12.	There have been times when I felt like rebelling against people in authority even though I knew they were right.
T	F	13.	No matter whom I'm talking to, I'm always a good listener.
T	F	14.	I can remember "playing sick" to get out of something.
T	F	15.	There have been occasions when I took advantage of someone.
T	F	16.	I'm always willing to admit it when I make a mistake.

PERSONAL REACTION INVENTORY (Continued)

Circle One

T F 17. I always try to practice what I preach.

T F 18. I don't find it particularly difficult to get along with loud mouthed obnoxious people.

T F 19. I sometimes try to get even rather than forgive and forget.

T F 20. When I don't know something I don't at all mind admitting it.

T F 21. I am always courteous, even to people who are disagreeable.

T F 22. At times I have really insisted on having things my own way.

T F 23. There have been occasions when I felt like smashing things.

T F 24. I would never think of letting someone else be punished for my wrong-doing.

T F 25. I never resent being asked to return a favor.

T F 26. I have never been irked when people expressed ideas very different from my own.

T F 27. I never make a long trip without checking the safety of my car.

T F 28. There have been times when I was quite jealous of the good fortune of others.

T F 29. I have almost never felt the urge to tell someone off.

T F 30. I am sometimes irritated by people who ask favors of me.

T F 31. I have never felt that I was punished without cause.

T F 32. I sometimes think when people have a misfortune they only got what they deserved.

T F 33. I have never deliberately said something that hurt someone's feelings.

APPENDIX XI

Children's Social Desirability Questionnaire

True/False and Yes/No Formats

APPENDIX XI

Name_____ Age___ Grade___ Sex___ School_____

Here are some questions about things that happen to all children you age. For each question, circle YES or NO. Please check that you have answered all questions.

YES NO 1. Does it sometimes bother you to share your things with your friends?

YES NO 2. Do you ever hit a boy or girl who is smaller than you?

YES NO 3. Do you ever act "fresh" or "talk back" to your mother or father?

YES NO 4. Do you ever let someone else get blamed for what you do wrong?

YES NO 5. Are you always careful about keeping your clothing neat and your room picked up?

YES NO 6. Do you always help people who need help?

YES NO 7. Do you sometimes argue with your mother to let you do something she doesn't want you to do?

YES NO 8. Do you ever say anything that makes somebody else feel bad?

YES NO 9. Are you always polite, even to people who are not very nice?

YES NO 10. Do you always listen to your parents?

YES NO 11. Do you ever forget say "please" and "thank you"?

YES NO 12. Do you sometimes wish you could just play around instead of having to go to school?

YES NO 13. Do you always wash your hands before every meal?

YES NO 14. Have you ever broken a rule?

YES NO 15. Sometimes, do you try to get even when someone does something to you that you don't like?

YES NO 16. Do you sometimes feel angry when you don't get your way?

APPENDIX XI (Continued)

YES NO 17. Do you sometimes feel like making fun of other people?

YES NO 18. Are you always glad to cooperate with others?

YES NO 19. Are there times that you don't like it if somebody asks you to do something for him?

YES NO 20. Do you sometimes get mad when people don't do what you want them to do?

APPENDIX XI (Continued)

Name_____ Grade___ Age___ School_____ Sex___

This questionnaire lists a number of experiences that most young people have at one time or another. Read each of these carefully. After you read one, decide whether it does or does not fit you. If it does, put a T (for true) in front of the statement; if it doesn't, put an F (for false) in front of the statement. Please check that all statements have been answered.

F 1. Sometimes I don't like to share my things with my friends.

T 2. I would never hit a boy or girl who was smaller than me.

T 3. I never act "fresh" or "talk back" to my mother or father.

T 4. I never let someone else get blamed for what I did wrong.

T 5. I am always careful about keeping my clothing neat, and my room picked up.

T 6. I always help people who need help.

F 7. Sometimes I argue with my mother to do something she doesn't want me to.

T 8. I never say anything that would make a person feel bad.

T 9. I am always polite, even to people who are not very nice.

T 10. I always listen to my parents.

T 11. I never forget to say "please" and "thank you".

F 12. Sometimes I wish I could just "mess around" instead of having to go to school.

T 13. I always wash my hands before every meal.

T 14. I have never been tempted to break a rule or a law.

F 15. Sometimes I try to get even when someone does something to me I don't like.

F 16. I sometimes feel angry when I don't get my way.

F 17. I sometimes feel like making fun of other people.

APPENDIX XI (Continued)

T 18. I am always glad to cooperate with others.

F 19. Sometimes I don't like it when another person asks me to do things for him.

F 20. Sometimes I get mad when people don't do what I want.

APPENDIX XII

Feeding Attitudes Questionnaire

APPENDIX XII

FEEDING ATTITUDES QUESTIONNAIRE

Please rate each of the following statements according to scale below:

1 Agree Strongly
2 Agree Moderately
3 Agree Somewhat
4 Disagree Somewhat
5 Disagree Moderately
6 Disagree Strongly

1. When visiting, children should eat everything they're served.	1	2	3	4	5	6
2. It is a sin to waste food.	1	2	3	4	5	6
*3. Most children are capable of deciding how much to eat at meals.	1	2	3	4	5	6
4. A child should have an explanation for not finishing his dinner.	1	2	3	4	5	6
*5. Children should be consulted in menu planning.	1	2	3	4	5	6
6. It is a mother's responsibility to decide how much her child eats at mealtimes.	1	2	3	4	5	6
*7. Children should not have to eat foods they dislike, just to be polite.	1	2	3	4	5	6
8. Children should be encouraged to clean their plates.	1	2	3	4	5	6
*9. Children should be permitted to prepare their own school lunches.	1	2	3	4	5	6
*10. Food should never be used to reward children.	1	2	3	4	5	6
*11. Most children will not eat more than they need.	1	2	3	4	5	6
12. Children should not eat more than three times per day.	1	2	3	4	5	6
13. When the family dines together, everyone should eat the same thing.	1	2	3	4	5	6
14. Most children will overeat if left unsupervised.	1	2	3	4	5	6

FEEDING ATTITUDES QUESTIONNAIRE continued

1 Agree Strongly
2 Agree Moderately
3 Agree Somewhat
4 Disagree Somewhat
5 Disagree Moderately
6 Disagree Strongly

*15. Most children are capable of making reasonable food selections on their own.	1	2	3	4	5	6
*16. Children should be permitted to eat as much or as little as they want.	1	2	3	4	5	6
17. A mother should know how much her child has eaten at mealtime..	1	2	3	4	5	6
18. A child should not be given dessert until he has cleaned his plate.	1	2	3	4	5	6
*19. Most children eat just as much as they need..	1	2	3	4	5	6
*20. Children should be allowed to choose their own meal in restaurant.	1	2	3	4	5	6
*21. Children should be permitted to visit the refrigerator without permission.	1	2	3	4	5	6
22. An effective way to persuade children to eat foods they dislike is to promise them their favorite dessert.	1	2	3	4	5	6

APPENDIX XIII.

Development of Feeding Attitudes Questionnaire

APPENDIX XIII

Development of Feeding Attitudes Questionnaire

The Feeding Attitudes Questionnaire was developed as follows: a set of 46 items was constructed based on the literature, clinical experience of the author and replies of 15 mothers of elementary school children to an open-ended Family Eating Patterns Survey (FEPS). Copies of the FEPS and the preliminary 46 item FAQ are provided in Appendix XIII-1 and Appendix XIII-2, respectively. Items were clustered, on the basis of face validity, into five subscales including: food selection, timing of eating, amount consumed and use of food as reinforcement. Items which did not clearly reflect any of the foregoing topics were included in a miscellaneous category. Of the 46 items, 22 were keyed so that the respondent must agree in order to appear permissive. An asterisk appears beside the number of those items in Appendix XIII-2 on which agreement reflects a permissive attitude. Possible scores on the preliminary FAQ ranged from 46 to 276, with higher scores indicating greater permissiveness.

The preliminary 46-item questionnaire was distributed to 268 mothers of daycampers and elementary school children of predominantly middle and upper-middle class socioeconomic background. Fifty mothers completed and returned their questionnaires. The mean score on the preliminary FAQ was 176.4. Scores ranged from 136 to 208, with a standard deviation of 24.1. The internal reliability of the total 46 item preliminary scale, using Cronbach's Alpha, was .85. Subscale alphas were .78 for amount consumed (15 items), .52 for timing of eating (8 items) and .68 for use of food as reinforcement (4 items).

APPENDIX XIII (Continued)

In the original mailing of the preliminary FAQ, respondents had been asked to indicate their willingness to be retested after a one month interval. Of the 50 mothers who returned the preliminary FAQ, retest data was available for 26 of them. The test-retest reliability on this sample, using the Pearson Product Moment Correlation Coefficient, was .84, $p<.001$.

Finally, in order to evaluate the construct validity of the measure, it was administered to 15 mothers of nonobese and 10 mothers of obese children, aged 8 to 12 years. A t-test indicated a significant difference between the mean scores of mother of obese (165) and mothers of nonobese (179) children, $t=2.415$, $df=23$, $p<.012$.

Based on the results of item analysis of the preliminary FAQ, a shortened version of the scale was prepared. The 22 items which were retained were those which satisfied the requirement of correlating with both total score (minimum r=.20) and the individual subscale score (minimum r=.35). For each item in the preliminary FAQ, correlations with the total scale and appropriate subscale are presented in Appendix XIII-3.

In order to equalize the number of positively and negatively keyed items, two positively keyed items in the original miscellaneous category were eliminated, in addition to a positively keyed item in the reinforcement subscale. The final 22-item FAQ included two reliable subscales, i.e food selection (6 items), and amount consumed (12 items). As well, there remained 4 miscellaneous items.

APPENDIX XIII-1

Family Eating Patterns Survey

APPENDIX XIII-1

FAMILY EATING PATTERNS SURVEY

Parents face many challenges and problems in ensuring that their family is well-fed. Your participation in this survey will help to provide information on the types of situations related to eating which parents commonly encounter, and how these situations are handled.

PLEASE ANSWER THE FOLLOWING QUESTIONS:

Do you have a general philosophy about child-rearing practices related to food and eating? Please describe briefly.

List 3 specific rules governing eating in your home. These may pertain to such topics as: In-Between-Meal Snacks; Portion Size; Junk Food; Menu Selection; Mealtimes; Speed of Eating; Table Behavior; Beverages; Desserts; Second Helpings; etc.

Rule 1. _____

Rule 2. _____

Rule 3. _____

Who enforces these rules? _____

How consistently are these rules enforced? (Circle choice for each rule)

Rule 1.	Never	Rarely	Sometimes	Often	Always
Rule 2.	Never	Rarely	Sometimes	Often	Always
Rule 3.	Never	Rarely	Sometimes	Often	Always

FAMILY EATING PATTERNS SURVEY. (Continued)

Page 2.

Whether or not you have a specific set of rules about eating, certain problematic situations or conflicts are bound to arise. Please provide 2 or 3 examples of such incidents experienced by your family. Feel free to include situations involving other children, grandparents, etc., as well as interactions occurring outside the home (eg. restaurants, friends' homes, etc.)

The following are 3 sample responses:

Example 1. It is 6:00 p.m. and you call the family in to dinner. your child informs you that he is not very hungry because he had milk and cookies at a friend's house, after swimming practice at 4:30 p.m.

Example 2. Your child asks you for a second helping of roast beef at lunch. You notice that he has not touched the vegetables on his plate.

Example 3. You have spent the entire afternoon preparing a new recipe. You spouse is delighted and you find it delicious. Your child eyes it suspiciously, and after one mouthful, declares it unfit for consumption.

Your examples:

Example A.

Example B.

FAMILY EATING PATTERNS SURVEY (Continued)

Page 3.

Example C.

For each example you have provided, please answer the following:

(1) What was your response to the situation?

(2) What was the outcome?

(3) If you were faced with this situation again, would you handle it the same way? Please explain.

(4) How often do situations of this type happen to your family? (Please indicate number of times daily, weekly or monthly)

Example A. (1)

(2)

(3)

(4)

FAMILY EATING PATTERNS SURVEY (Continued)

Example B. (1)

(2)

(3)

(4)

Example C. (1)

(2)

(3)

(4)

FAMILY EATING PATTERNS SURVEY (Continued)

Page 5.

Now, for each of the sample situations provided on page 2, please answer the following:

(1) How would you have handled this situation?

(2) How else might this situation have been handled? (Please list possible alternatives.)

(3) How often does this type of situation happen to your family? (Please indicate number of times daily, weekly or monthly)

Example 1. (1)

(2)

(3)

Example 2. (1)

(2)

(3)

FAMILY EATING PATTERNS SURVEY (Continued)

Page 6.

Example 3. (1) _____

(2) _____

(3) _____

Please note the age and sex of each of your children and check whether each is underweight, normal weight or overweight.

	Sex	Age	Underweight	Normal Weight	Overweight
1.	___	___	___	___	___
2.	___	___	___	___	___
3.	___	___	___	___	___
4.	___	___	___	___	___
5.	___	___	___	___	___

This questionnaire completed by Mother ___ Father ___ Other ___

Are you Underweight___ Normal Weight___ Overweight___ Age ___

Is spouse Underweight___ Normal Weight___ Overweight___ Age ___

FAMILY EATING PATTERNS SURVEY (Continued)

Page 7.

Please indicate, for yourself and your spouse, both highest educational degree obtained and occupation.

	Highest Degree	Occupation
Mother	_____	_____
Father	_____	_____

Thanks for your participation!

Please return to:

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Montreal, Que.
H3G 1M8

Applied Psychology Centre (GM600)
Tel: 935-1427
879-4285

APPENDIX XIII-2

Feeding Attitudes Questionnaire (preliminary)

APPENDIX XIII-2

FEEDING ATTITUDES QUESTIONNAIRE

For each of the following statements, please indicate whether you Agree Strongly, Agree Moderately, Agree Somewhat, Disagree Somewhat, Disagree Moderately, or Disagree Strongly. Please make sure that all statements have been rated.

1 Agree Strongly
2 Agree Moderately
3 Agree Somewhat
4 Disagree Somewhat
5 Disagree Moderately
6 Disagree Strongly

1. When visiting, children should eat everything they're served.	1	2	3	4	5	6
2. It is a sin to waste food.	1	2	3	4	5	6
*3. A good mother keeps her children's favorite foods on hand.	1	2	3	4	5	6
*4. Most children are capable of deciding how much to eat at meals.	1	2	3	4	5	6
5. Children should never eat before going to sleep.	1	2	3	4	5	6
6. A good way to celebrate is by going out to eat.	1	2	3	4	5	6
*7. Children should be permitted to reject foods they dislike.	1	2	3	4	5	6
8. A child should have an explanation for not finishing his dinner.	1	2	3	4	5	6
*9. Children should be consulted in menu planning.	1	2	3	4	5	6
10. Children who dawdle at mealtimes should be encouraged to hurry up.	1	2	3	4	5	6
11. It is a mother's responsibility to decide how much her child eats at mealtimes.	1	2	3	4	5	6
12. Missing dessert is an effective punishment for children's misbehavior	1	2	3	4	5	6

FEEDING ATTITUDES QUESTIONNAIRE continued

1 Agree Strongly
2 Agree Moderately
3 Agree Somewhat
4 Disagree Somewhat
5 Disagree Moderately
6 Disagree Strongly

*13. Children should not have to eat foods they dislike, just to be polite.	1	2	3	4	5	6
14. Children should be encouraged to clean their plates.	1	2	3	4	5	6
15. Children should be permitted to stand while eating.	1	2	3	4	5	6
16. Children should be permitted to eat a sandwich, if they don't like what's been served for dinner.	1	2	3	4	5	6
17. Most children will stuff themselves with cake and candy if you let them.	1	2	3	4	5	6
*18. Children should be permitted to prepare their own school lunches.	1	2	3	4	5	6
*19. Food should never be used to reward children.	1	2	3	4	5	6
*20. Children should be served second helpings on request.	1	2	3	4	5	6
*21. Most children will not eat more than they need.	1	2	3	4	5	6
22. It is a mother's responsibility to decide which foods her child eats.	1	2	3	4	5	6
23. Children should not eat more than three times per day.	1	2	3	4	5	6
24. Most children will sneak food if left unsupervised.	1	2	3	4	5	6
25. When the family dines together, everyone should eat the same thing.	1	2	3	4	5	6
*26. Children should be permitted to serve themselves at mealtimes.	1	2	3	4	5	6

FEEDING ATTITUDES QUESTIONNAIRE continued

1 Agree Strongly
2 Agree Moderately
3 Agree Somewhat
4 Disagree Somewhat
5 Disagree Moderately
6 Disagree Strongly

27. Most children will overeat if left unsupervised.	1	2	3	4	5	6
*28. Most children are capable of making reasonable food selections on their own.	1	2	3	4	5	6
*29. Children should be permitted to eat as much or as little as they want.	1	2	3	4	5	6
30. Children must be encourage to try new foods.	1	2	3	4	5	6
*31. Most children can learn the basics of good nutrition.	1	2	3	4	5	6
32. Sometimes children must eat when they are not hungry, just to be polite.	1	2	3	4	5	6
*33. Children should be exposed to the art of cooking at an early age.	1	2	3	4	5	6
34. A mother should know how much her child has eaten at mealtime.	1	2	3	4	5	6
35. Children should be instructed before-hand on what they may eat when visiting friends.	1	2	3	4	5	6
36. A child should not be given dessert until he has cleaned his plate.	1	2	3	4	5	6
*37. Most children eat just as much as they need.	1	2	3	4	5	6
38. Cookies should be stored out of children's reach.	1	2	3	4	5	6
*39. A child should not be made to clean his plate when eating in a restaurant.	1	2	3	4	5	6
40. Most children must be reminded to eat slowly.	1	2	3	4	5	6

FEEDING ATTITUDES QUESTIONNAIRE continued

1 Agree Strongly
2 Agree Moderately
3 Agree Somewhat
4 Disagree Somewhat
5 Disagree Moderately
6 Disagree Strongly

*41. Children should be allowed to choose their own meal in restaurant.	1	2	3	4	5	6
*42. Children should be permitted to visit the refrigerator without permission.	1	2	3	4	5	6
*43. A child who is not hungry at mealtime should be allowed to eat later.	1	2	3	4	5	6
44. An effective way to persuade children to eat foods they dislike is to promise them their favorite dessert.	1	2	3	4	5	6
45. Children should be permitted to eat whenever they want.	1	2	3	4	5	6
46. The whole family should always eat together.	1	2	3	4	5	6

APPENDIX XIII-3

Corrected Item-Total and Item-Subscale Correlations for Preliminary FAQ

APPENDIX XIII-3

Corrected Item-Total and Item-Subscale: Correlations for Preliminary FAQ

Item	Subscale	Item-Total r	Item-Subscale r
* 1	Amount	.36	.37
* 2	Amount	.34	.35
3	Selection	-.08	.04
* 4	Amount	.34	.39
5	Time	.32	.12
6	Reinf.	-.22	.08
7	Selection	.42	.34
8	Amount	.58	.59
* 9	Selection	.27	.46
10	Time	.28	-.12
*11	Amount	.55	.58
12	Reinf.	.43	.65
*13	Selection	.33	.38
*14	Amount	.37	.37
15	Misc.	.19	
16	Selection	.24	.33
17	Selection	.14	.02
*18	Selection	.46	.42
*19	Reinf.	.23	.67
20	Amount	.18	.002
*21	Amount	.29	.44

Corrected Item-Total and Item-Subscale: Correlations for Preliminary TAQ (Continued)

Item	Subscale	Item-Total r	Item-Subscale r
22	Selection	.29	.30
*23	Time	.42	.56
24	Misc.	.27	
*25	Selection	.43	.39
26	Amount	.22	.25
*27	Amount	.40	.37
*28	Selection	.54	.51
*29	Amount	.43	.51
30	Selection	.26	.29
31	Selection	.12	.16
32	Misc.	.42	
33	Misc.	.06	
*34	Amount	.38	.40
*35	Selection	.51	.32
*36	Amount	.43	.43
*37	Amount	.30	.37
38	Selection	.25	.24
39	Amount	.12	.18
40	Time	.27	.30
*41	Selection	.50	.48
*42	Time	.44	.49
43	Time	.11	.17

Corrected Item-Total and Item-Subscale: Correlations for Preliminary FAQ (Continued).

Item	Subscale	Item-Total r	Item-Subscale r
*44	Reinf.	.44	.52
45	Time	.06	.30
46	Time	.46	.31

APPENDIX XIV

Tests for Simple Effects Children's Eating Inventory: Replication Study

APPENDIX XIV

Tests for Simple Effects Children's Eating Inventory: Replication Study

Source	SS	df	ms	F	Prob. F
Within Cells	9899.63	224	44.19		
Sex					
Grade Within Boys	1070.50	3	356.83	8.07	.000
Grade Within Girls	8.45	3	2.82	.06	.978
Grade					
Sex Within Grade 4,5	131.41	1	131.41	2.77	.086
Sex Within Grade 6,7	16.25	1	16.25	.37	.545
Sex Within Grade 8,9	410.51	1	410.51	9.29	.003
Sex Within Grade 10,11	312.24	1	312.24	7.07	.008

APPENDIX XV

Tests for Simple Effects Children's Eating Inventory: Covariance Study

APPENDIX XV

Tests for Simple Effects Children's Eating Inventory: Covariance Study

Source	SS	df	ms	F	Prob. F
Error Within	6439.7	177	36.4		
Regression	1053.4	1	1053.4	28.95	.000
Constant	67595.0	1	67595.0	1857.90	.000
Sex					
Grade Within Boys	920.5	3	306.8	8.43	.000
Grade Within Girls	69.0	3	23.0	.63	.595
Grade					
Sex Within Grade 4,5	127.2	1	127.2	3.50	.063
Sex Within Grade 6,7	43.1	1	43.1	1.19	.277
Sex Within Grade 8,9	532.4	1	532.4	14.63	.000
Sex Within Grade 10,11	190.9	1	190.9	5.25	.023

APPENDIX XVI

Analysis of Variance: Age

APPENDIX XVI

Analysis of Variance: Age

Source	SS	df	ms	F	Prob. F
Age	363.14	1	363.14	317.65	.000
Weight	.16	1	.16	.14	.705
Sex	5.23	1	5.23	4.57	.035
Interaction Age X Weight	2.51	1	2.51	2.19	.142
Interaction Age X Sex	4.33	1	4.33	3.79	.054
Interaction Weight X Sex	.07	1	.07	.06	.804
Interaction Age X Sex X Weight	4.65	1	4.65	4.06	.047
Error Within	96.03	84	1.14		
Constant	14600.88	1	14600.88	12771.69	.000

Note: n = 92

APPENDIX XVII

Analysis of Variance: Percent Overweight

APPENDIX XVII

Analysis of Variance: Percent Overweight

Source	SS	df	ms	F	Prob.
Age	.19	1	.19	.00	.964
Weight	32870.00	1	32870.00	350.42	0.0
Sex	121.23	1	121.23	1.29	.258
Interaction Age X Weight	99.25	1	99.25	1.06	.306
Interaction Age X Sex	12.05	1	12.05	.13	.720
Interaction Weight x Sex	284.15	1	284.15	3.03	.085
Interaction Age X Weight X Sex	10.81	1	10.81	.12	.735
Error Within	7879.39	84	93.80		
Constant	20133.92	1	20133.92	214.64	0.0

Note. n = 92

APPENDIX XVIII

Tests for Simple Effects: Age

APPENDIX XVIII

Tests for Simple Effects: Age

Source	SS	df	ms	F	Prob. F
Within Cells	96.03	84	1.14		
Total	14600.88	1	14600.88	12771.69	.000
Weight X Sex Within Young	2.94	1	2.94	2.57	.112
Weight X Sex Within Old	1.78	1	1.78	1.56	.215
Age X Weight Within Boys	4.84	1	4.84	4.23	.042
Age X Weight Within Girls	.63	84	.63	.55	.459
Age X Sex Within Obese	.17	1	.17	.15	.699
Age X Sex Within Normal	8.79	1	8.79	7.69	.006

APPENDIX XIX

Tests for Simple Effects Children's Eating Inventory: Obese and Normal Weight Sample

APPENDIX XIX

Tests for Simple Effects Children's Eating Inventory: Obese and Normal Weight Sample

Source	SS	df	ms	F	Prob. F
Error Within	3265.08	84	38.87		
Constant	45234.78	1	45234.78	1163.74	0.0
Age Within Obese	138.06	1	138.06	3.55	.062
Age Within Normal	606.57	1	606.57	15.61	.000
Weight Within Young	102.67	1	102.67	2.64	.107
Weight Within Old	2094.42	1	2094.42	53.88	.0000
Age Within Boys	413.69	1	413.69	10.64	.001
Age Within Girls	24.24	1	24.24	.62	.431
Sex Within Young	0.0	1	0.0	0.0	1.000
Sex Within Old	637.08	1	637.08	16.39	.000